AIR CONDITIONING & REFRIGERATION NEWS
The Newspaper of the Industry
Subscription Price, $6 Per Year Vol. 79, No. 17, Serial No. 1,449 December 24, 1956
Issued every Monday at 1270 West Fort St., Detroit 26, Michigan
Established 1926
Member, Associated Business Publications ABP ABC Member, Audit Bureau of Circulations
Reentered as second class matter October 3, 1936 at the post office at Detroit, Mich., under the Act of March 3, 1879.
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Inside Dope

By GEORGE F. TAUBENECK

Learn to live and laugh — thus delay your epitaph

Story of the Week
Merry Christmas!
Parents Unincorporated
Age Has Its Boons
Last Gasps
Groaners
Gags of the Week

Story of the Week

Mom's three sons all were rich. One gave her a new Cadillac for Christmas, another brought a mink coat. Third son, who couldn't make it back home, shipped her a Mynah bird which could sing opera arias in Italian and German, and speak four other languages.

Over long distance phone Mom expressed regret that No. 3 son couldn't be with her and the family for Christmas.

"How did you like the bird I sent you?" Son No. 3 reacted.

"Delicious!"

"But Mom!" he expostulated, "that bird was worth $10,000. It could speak and sing German, Italian, and you ATE it?"

Interrupted Mom: "Why didn't he speak up?"

Merry Christmas!

At this all-loving, grand pause for pleasure-and-humankindness Time of the Year, our thoughts focus on children and grandchildren. They are "the kingdom of heaven" and the Spirit of Christmas. Herewith a few stories *in re:*

Seeing a sky-writing job for the first time, Susie ran into the house.

"Mommy, mommy, come outside. God is writing us a letter."

"Mummy, please help me put on my dress. The zipper is in back, and I'm in the front."

"Don't spell words you don't want your children to hear," advises Sam Levenson. "They're too smart nowadays.

"If you want to keep something secret, pretend you are talking directly to them."

Exasperated by his small son's questionings, Father warned:

"Curiosity killed a cat, you know."

Sonnyboy pondered a moment, then sprung:

"What did the cat want to know, Father?"

"How do you like school, Sally?"

"Closed for vacation."

"I hope you didn't ask Mrs. Johnson for a second piece of

(Concluded on Page 6, Col. 1)

'Custom Styling' Keynotes Philco '57 Combinations

PHILADELPHIA — A new "custom styling" keynotes the 1957 combination refrigerators and freezers introduced by Philco Corp.

In addition, Philco introduced a fresh meat locker "designed to keep fresh meats and cold cuts at optimum humidity and in a 33° F. zone, as recommended by the National Live Stock and Meat Board," the firm noted.

Other features for 1957 include a waist-high crisper in the "Dairy Bar" door, a three-position convertible shelf for greater storage utility, larger capacity freezer compartments with door

(Concluded on Page 4, Col. 4)

No Dec. 31 Issue

DON'T LOOK FOR IT because it won't be there—your Dec. 31 copy of the NEWS, of course. Because there are 53 Mondays in 1956 we have combined the Dec. 24 and 31 issues into one, and this is it.

The Year-End Index of most significant stories will be found on pages 20, 21, and 22. Included with the index is a box which tells you which 1956 issues can still be ordered. On page 23 there is a list of many reprints which are available.

Merry Christmas, Happy New Year. See you again on Jan. 7.

American Blower Offers New Line

COLUMBUS, Ohio—American Blower distributors were recently shown new 1957 commercial packaged air conditioning units and told of new training and field warehousing programs at a sales year kick-off meeting here.

The affair, attended by distributors from every section of the U. S., was conducted by J. W. Hosler, product manager for American Blower's Commercial Air Conditioning Dept.

The program included, in ad-

(Concluded on Page 4, Col. 1)

45,000 Seen Attending Marts, Jan. 7 to 18

CHICAGO—Preparations are being completed for the annual winter home furnishings markets to be held Jan. 7-18 at The Merchandise Mart and The American Furniture Mart.

W. O. Ollman, general manager of The Merchandise Mart, predicted that the market there will be one of the largest in history, with 45,000 buyers, manufacturers, and salesmen congregating in Chicago for the big event. As usual, hotel space here is reported as very tight.

(Concluded on Back Page, Col. 4)

NCRSA Pushes 5 Check Points For Distributor

SAN FRANCISCO—National Commercial Refrigerator Sales Association members went thoroughly into all phases of their business at the 10th annual convention in the Mark Hopkins hotel here Dec. 3-4.

Progress was reported by George F. Wiedemer, chairman of the Joint Relations Committee, in negotiating a recommendation to manufacturers they distribute their products only through distributors in a position to furnish: showroom and warehouse, inventory of refrigerator cases and fixtures, competent service department or service contracted out, furnish engineering service, and adequate stock of parts.

Wiedemer also reported progress on the subject of sales to ice cream and dairy manufacturers. Progress is being made by NCRSA through its secretary, Miss Marie Lawton, and her dealings with the Federal Trade Commission, and through

(Concluded on Page 10, Col. 1)

G-E To Feature 'Built-In' Look Refrigerators

LOUISVILLE, Ky. — New 1957 "straightline" refrigerators with that built-in look and one "roll-out" and two "bookshelf" style freezers were introduced recently by the General Electric Co.

Also introduced for 1957 were:

A more extensive "Thinline" series of room air conditioners available in color and with electronic filter and including a 1-hp. model operating on 115 volts. This line was described in detail in the Nov. 12 issue of the NEWS.

Electric ranges featuring removable oven door for easier cleaning, a "no-drip" edge around the range top, wider ovens, and a meat thermometer alarm that sounds a buzzer when the meat is done.

Three automatic dishwashers —two undercounters and a mobile unit—featuring new "Flush-away Drain" and fire hose action that eliminates the need for scraping dishes.

Two food waste disposers

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BEHIND PAGE ONE . . .

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Texas Group Pre-Qualifies Contractors To Hinder Bid Shopping

MIAMI BEACH, Fla. — How Texas mechanical contractors are working to eliminate bid shopping was described during a management forum at the annual convention of the Refrigeration & Air Conditioning Contractors Association here recently.

William D. Moody, Houston contractor and newly-elected president of RACCA, told how pre-qualification of contractors, standardizing bid forms, and employment of a bid depository is improving bidding conditions in his state.

Moody explained that a bid depository is the very last phase of bidding. It is not needed where there is no "chiseling" as its purpose is merely to prevent bid shopping.

First step in improving the situation, he declared, is to "regulate the bidders." By this, he meant to establish a means of letting the general contractors, architects, and owners know what the qualifications of each bidder are.

To accomplish this in Texas, the mechanical contractors are preparing "pre-qualification booklets" on its members.

Data included are:

1. Name of the organization.
2. Officers and/or members.
3. Type of work done by the organization.
4. Engineering services available.
5. Scope of contracting ability divided into three classes: Up to $500,000, $500,000 to $1,000,000, and over $1,000,000.
6. Any other appropriate data to be determined by survey of local associations.

(Concluded on Back Page, Col. 1)

200 Contractors Employes Go to First ARW Clinic

60 Manufacturers Give Answers To Questions On Product Problems

CHICAGO — First of the "Product Knowledge Clinics" to be sponsored by the Air Conditioning & Refrigeration Wholesalers Association (ARW) was held Friday and Saturday, Dec. 14 and 15 in the Morrison hotel here, with a registration of over 500, of whom something over 200 were air conditioning and refrigeration contractors and their employes.

The remainder of the registration included wholesalers, representatives of manufacturers, and a miscellany of others with an interest in the industry.

Some 60 manufacturers operated conference tables, at which those attending could ask questions and discuss individual problems about particular products. Several manufacturers operating such conference tables said that the interest shown and discussions held at these tables were of a high type.

This first "Product Knowledge

(Concluded on Page 24, Col. 1)

NARDA To Discuss Adjustment to Industry Trends

CHICAGO—New trends in the appliance industry and how dealers can adjust to them will be one of the topics of discussion at the annual convention of the National Appliance & Radio-TV Dealers Association Jan. 13 to 15 at the Conrad Hilton hotel here.

Other areas of discussion will include requirements of being a retail executive, dealer finance, central service versus independent service, new products, manpower, and management techniques.

Among manufacturers on the program will be Elisha Gray II, president of Whirlpool-Seeger

(Concluded on Back Page, Col. 3)

Brent Oberer, Friedrich Conditioning Div. Mgr., Dies In Hunting Mishap

SAN ANTONIO—A hunting accident took the life of Brent Oberer, executive of Friedrich Refrigerators, Inc. here.

Oberer's rifle accidentally discharged as he stepped from an automobile while deer hunting recently with a group of friends on a ranch near Comfort, Texas.

Oberer was manager of the air conditioning division of Friedrich, a position he had held for several years.

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Wichita Code To Require

License, Permit for 2-Hp. Refrigeration, 2-Hp. Air Conditioner Installations

WICHITA, Kan.—A new air conditioning, refrigeration, and warm air heating code, giving broad powers to a seven-man board of examiners, has been adopted by the city of Wichita.

It provides that after Dec. 27, anyone engaged in the business of refrigeration, air conditioning, or warm air heating contractor must be certified by the city examining board, possess a contractor's license, and post a $2,000 bond.

Anyone working as an installation or service mechanic must pass a journeyman's examination and possess a journeyman's certificate.

Excepted are operating engineers and maintenance mechanics who perform their services exclusively for one person or firm in buildings owned or operated by such person or firm.

Permits and licenses will be required for all refrigeration work where the combined capacity of all units on any one installation is more than 2 hp. and all air conditioning work except for room air conditioners of no more than 2-hp. capacity and without ductwork.

NO PERMIT NEEDED FOR REPAIRS UNDER $100

No permit will be required for minor repairs or alterations which do not exceed $100 as the price charged for such work.

The seven-man board of examiners will be comprised of the city building inspection superintendent, a licensed air conditioning contractor, a licensed refrigeration contractor, a licensed warm air heating contractor, a journeyman in any of these fields, a mechanical engineer, and an architect.

In addition to testing the qualifications of applicants for master or journeymen certificates, the board will also have power to act as arbitrator between members of the trade and the building inspector, grant variances from the strict application of the code in specific instances, pass upon materials or methods of installation not sufficiently covered by the code, and study and make such rules as are required for new products being offered for use in air conditioning, refrigeration, and warm air heating systems.

CERTIFICATES CANCELED FOR ANY OF 9 REASONS

It will further have the power to cancel and recall certificates for any of nine specified reasons. Four of the reasons apply directly to violations of the code. The other five include such actions as:

Abandonment of any contract without legal cause.

Diversion of funds or property received.

Failure to satisfy all claims for labor and materials used.

Carelessness or negligence in safety measures.

Unreasonable delay in the performance and carrying out of any contract.

When a certificate has been revoked, a new certificate will not be granted until the violation has been corrected and the person shall reapply for and pass again the regular examination.

Decisions of the board, however, can be appealed to the city's board of commissioners, if filed within 20 days of the examining board's decision.

The code sets up three classifications of contractor and corresponding classifications of journeymen.

The code adopts by reference the ASA B9.1 safety code for mechanical refrigeration, National Board of Fire Underwriters codes 90 A and 90 B for air conditioning and heating systems, and ASHAE, ARI, and NWAHACA standards and guides.

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LOWEST in operating costs, too! Kramer's new "L" THERMOBANK saves important dollars every day it works for you. It's the only LOW temperature automatic hot gas defrost system that works trouble-free at any temperature level, from plus 32° to minus 75°. Let us prove that it costs less to own the best!

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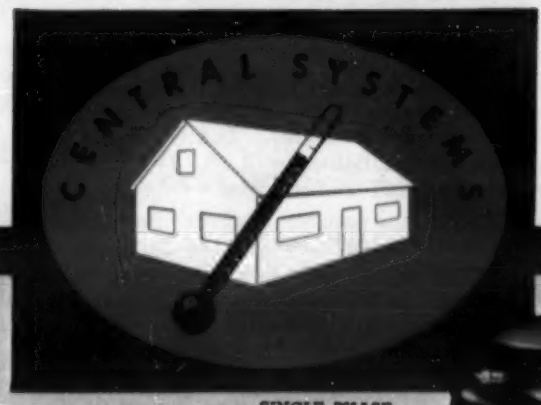
KRAMER **THERMOBANK**

KRAMER TRENTON COMPANY
Trenton 5, New Jersey

For more information about products advertised on this page use Information Center, page 16.

Tecumseh COMPRESSORS

encompass EVERY refrigeration application!



OVER 50% OF THE CENTRAL SYSTEMS USE Tecumseh COMPRESSORS

HERE'S WHY—Tecumseh has everything the year-around air conditioning manufacturer wants in a hermetic compressor designed for his application. The economy, flexibility and scope of these 7 basic models cover numerous variations to pinpoint the compressor to the application. Tecumseh customers are assured of the ideal compressor for split or zone systems, add-on or package units and remote installations.

Incorporating features vitally important to year-around air conditioning, Tecumseh offers a horsepower range from 1½ to 5 H.P., with BTU ratings from 16,500 to 62,500. In the 1½ and 2 H.P. group, customers have a choice of internal or external mount compressors. Model B74T16 is an economy 2 H.P. for air cooled applications which do not require full 2 H.P. capacity.

The 2 and 3 H.P. internal mount compressors are available in single or three phase, for either air or water cooled applications. Models JB200 and JE300 are charged with F-22 and model JE200 with F-12. Optional equipment provides an oil sight glass to quickly check the oil level and flange valves for easy compressor exchange.

All of the latest compressor advancements included in the integral line are incorporated into the externally mounted 5 H.P. compressor. Single or three phase models are available as well as flange valves and oil sight glasses. Designed for high back pressure only, this model is charged with Freon 22.

Tecumseh Hermetic Air Conditioning Compressors have been designed for the toughest conditions associated with this application. In 90° ambient with a 45° coil they will deliver full rated capacity. Further, they will operate properly in 120° ambient and continue to cool even on 90% of rated voltage.

Apply the advantages of the only complete line of compressors designed expressly for air conditioning. For detailed information and specifications write your nearest Tecumseh District Office today.

Model B32P16
1½ H.P.—16,500 BTU

Model B74T16
2 H.P.—19,500 BTU

Model JB150
1½ H.P.—16,400 BTU

THREE PHASE
Model FB500
5 H.P.—62,500 BTU

SINGLE PHASE
Model FB500
5 H.P.—62,500 BTU

SINGLE PHASE
Models
JB200—2 H.P.—24,000 BTU
JE200—2 H.P.—22,500 BTU
JE300—3 H.P.—35,000 BTU

THREE PHASE
Models
JB200—2 H.P.—24,000 BTU
JE200—2 H.P.—22,500 BTU
JE300—3 H.P.—35,000 BTU

SINGLE PHASE
Models
JB200—2 H.P.—24,000 BTU
JE300—3 H.P.—35,000 BTU

COMPLETE LINES – VOLUME PRODUCTION – PRICED RIGHT

OVER 22,000,000 COMPRESSORS IN USE TODAY

The World's Largest Producer of Compressors for the Refrigeration Industry

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Marion, Ohio

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For more information about products advertised on this page use Information Center, page 16.

SELF-CONTAINED commercial air conditioning packaged units produced for 1957 by American Blower Corp. are available in 3, 5, 7½, 10, 15, and 20-ton sizes.

American Blower Has Package Units--

(Concluded from Page 1, Col. 2)

dition to the introduction of the 1957 line, a tour of the recently-completed commercial packaged air conditioning manufacturing facilities at American Blower's Columbus plant. The production line seen by the visiting distributors "is one of the most modern in the country," the company said.

A high point of the meeting came when the new air conditioning training school was discussed. Hosler described the application engineering and service courses now available for distributors' employes.

The all-new training school is a part of the company's main office facilities in Dearborn, Mich. The first series of one-week courses is scheduled to begin in February.

Another meeting highlight was the announcement of new incentive contests to be sponsored by American Blower during 1957. Target award for all distributors will be an eight-day Nassau-Havana trip for 10 men and their wives.

The 1957 American Blower self-contained C.A.C. units are available in 3, 5, 7½, 10, 15, and 20-ton sizes.

Features include new "eye-appeal" cabinet design. Heavy gauge furniture steel is used for cabinet construction. It is coated with a rust-resistant primer and finished with grey metallescent enamel.

"Inside the unit is a new, efficient sloped cooling coil (evaporator) design which permits greater cooling area for a given coil size as compared with flat designs," the company declared.

"The greater the coil area over which a given amount of intake air is passed, the greater the cooling and dehumidification efficiency of the air conditioner.

"Performance characteristics of the new sloped coil design are augmented by use of spiral aluminum fins and staggered copper tubes. The greater air-coil contact achieved results in better heat, moisture transfer.

"The new conditioners also feature a more efficient draw-through air flow design. With air drawn through the coil, rather than blown through, cooling capacity is increased because air passes equally over every square foot of coil area."

"Unusually low" plenum height for installation flexibility continues as a feature of American Blower packaged commercial air conditioning units in 1957, it was stated. The new plenum design has adjustable louvers for control of both horizontal and vertical discharge air.

Wide use of special safety devices was also emphasized.

"Overload cut-outs are part of the compressor motor and fan motor circuitry," it was pointed out. "The compressor is provided with a thermal cut-out which cuts off the motor should the temperature exceed a predetermined limit.

"The condenser is also equipped with a fusible plug which melts to release refrigerant from the system in the event of overheating. Pressure limiting safety devices are also included."

Fogel To Act as Jordon Commercial Unit Agent

PHILADELPHIA — Reports that Fogel Refrigerator Co. has purchased the patent and manufacturing rights to Jordon commercial and chest type freezers has been denied by William Fogel, president.

However, it is reported that Fogel has confirmed plans to act as national sales agent for Jordon commercial refrigeration equipment.

Philco Offers 'Custom Styling'--

(Concluded from Page 1, Col. 2)

racks for cans and cartons and slide-out basket for bulky packages, and interior floodlighting, it was explained.

Philco said the simplicity of the exterior design of the "Super Marketer" custom design models is highlighted by gray textured finish on the lower freezer door sections. Three of these models also have foot pedal freezer door openers. Interior color of all models is "Seatone" which the firm says adds "brilliance" to the units.

COMBINATION refrigerator-freezer, called "Super Marketer," is offered for 1957 by Philco Corp.

'SUPER MARKETER' HAS BUILT-IN LINES

Regarding the Super Marketer design, the company said square corners, straight edges, and flat surfaces match structural lines of built-in cabinets.

Cold zone and optimum humidity are achieved by having chilled air flow directly from freezing coils to the meat locker through a duct in the back wall of the refrigerator, the company stated. The refrigerator compartment holds 38° temperature and automatically defrosts.

All new models have a safety latch which permits opening the refrigerator from the inside. All Super Marketer models are available with either right or left hand opening door.

ADDITIONAL HIGHLIGHTS

In addition to the listed features, the eight models in Philco's line have these highlights and suggested prices:

A 15.8-cu. ft. Super Marketer (RF-1678) has 9-cu. ft. refrigerator, 6.8-cu. ft. freezer, Dairy Bar storage door with bottle and milk shelf, full-width egg shelf with two egg racks, sliding doors for butter keeper and cheese keeper, aluminum refrigerator interior, crisper drawer, white finish exterior with textured gray freezer door, "easy-out" ice trays and ice slices, self-service freezer door, sliding frozen food baskets, and "Suntone" or "Startone" colors. It retails for $629.95.

RF-1478 is a 13.6-cu. ft. Super Marketer with 8.5-cu. ft. refrigerator, 5.1-cu. ft. freezer, 33° zone meat locker, two adjustable pull-out shelves, "fold-away" three-position shelf, porcelain finish interior, white finish exterior refrigerator door with textured gray freezer door, Dairy Bar with waist-high, pull-down crisper, egg racks, butter keeper, cheese keeper, milk shelf, and Suntone and Startone colors at $579.95.

RF-1278, an 11.9-cu. ft. Super Marketer with 8.5-cu. ft. refrigerator, 3.4-cu. ft. freezer, 33° zone meat locker, two adjustable pull-out shelves, three position fold-away shelf, white finish exterior refrigerator door and textured gray finish freezer door, Dairy Bar with pull-down waist-high crisper, butter keeper, egg racks, cheese keeper, milk shelf, and suggested price of $539.95.

Super Marketer RF-1277, an 11.9-cu. ft. unit, has 8.5-cu. ft. refrigerator, 3.4-cu. ft. freezer, fold-away shelf, white finish exterior, Dairy Bar with waist-high crisper, butter keeper, egg racks, jar shelf, milk shelf, and retail price of $489.95.

RD-1276 is a 12.3-cu. ft. two-door model with freezer capacity of 2.58 cu. ft., freezer door recessed, double-depth Dairy Bar, adjustable pull-out shelf with nine positions, "Visa-crisper," self-closing door latches, porcelain interior, white finish exterior, anodized aluminum shelves, and $469.95 price.

RD-1176 is a 10.2-cu. ft. two-door model with 2-cu. ft. freezer, freezer door recessed, double-depth Dairy Bar, $399.95 price.

An 8.6-cu. ft. unit (RS-974) has 1.5-cu. ft. freezer, full-width crisper, full-length storage door with suggested price of $279.95.

Model RS-973 is a 9.5-cu. ft. refrigerator with a 1.5-cu. ft. freezer, full-length storage door, and retail price of $239.95.

Last Packer-Distributor Frozen Food Show Opens Jan. 6 at Miami Beach

MIAMI BEACH, Fla. — The five-day 1957 national frozen food convention-exposition will get under way here on Sunday, Jan. 6.

This will be the last joint packer-distributor convention. In the future, separate sales and production conventions will be held.

At the 1957 show, all of the exhibits will be on one level in the Eden Roc hotel, with packers, suppliers, and equipment manufacturers intermingled throughout the area. Convention morning business sessions will be held at the Eden Roc and Fontainebleau hotels.

Opening-day events include the annual luncheon of the National Frozen Food Distributors Association. Regional meetings, a discussion on regulated vs. unregulated carriers, and a joint packer-distributor convocation are scheduled for Jan. 7.

Planned for Jan. 8 is a session in which grocers will analyze what's right and wrong with frozen food distribution. Also set for the same day is presentation of a report on results and significance of research on frozen fruits, vegetables, and prepared foods, and the annual meeting of the National Prepared Frozen Food Processors Association.

Sessions on financing, warehousing, sales relations, and transportation, and a joint meeting on the future of the industry will be held Jan. 9. Scheduled for Jan. 10 are panels on new developments in frozen meats, fish, "The Orange Concentrate Outlook," and the institutional market.

There's nothing like high reserve capacity!

PA® 400 has the highest capacity for moisture adsorption under the most adverse conditions in refrigerator operation . . . higher than any other desiccant. This reserve capacity is a safety factor. PA 400 keeps the refrigerator running even though there is sufficient moisture in the system to completely "saturate" other desiccants.

No other refrigeration desiccant gives you as much as PA 400 . . .

- Highest capacity
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Producers of: Catalysts, Inorganic Acids, Triple Superphosphates, Superphosphates, Phosphate Rock, Silica Gels and Silicofluorides. Sole Producers of DAVCO® Granulated Fertilizers.

For more information about products advertised on this page use Information Center, page 16.

ARI Challenges 10% Room Unit Excise Tax as 'Unfair,' Asks Cut

WASHINGTON, D. C.—Self-contained room air conditioners should be accorded the same tax treatment as other "household appliances," John H. Pratt, counsel for the Air-Conditioning & Refrigeration Institute, told a House Ways and Means subcommittee which recently held public hearings on proposals for excise changes.

Pratt said elimination of the inequity now imposed on room air conditioners of less than 1 hp. by the 10% manufacturers' excise tax, when other "household appliances" pay only a 5% tax, would "permit this industry to compete on terms of equality for its share of the consumer's dollar spent on household appliances.

'100% MORE TAX PER SALES DOLLAR'

"As matters now stand, the members of this new industry must pay 100% more tax per dollar of sales than manufacturers of other household appliances," he stated.

The present 10% tax on "self-contained air conditioning units," he said, "is not only discriminatory and unfair, but was enacted under circumstances which strongly indicate that Congress was not aware of this disparity of treatment."

In other statements, spokesmen for the appliance industry urged that the Federal manufacturers' excise taxes on their products be repealed.

In addition, the Institute of Appliance Manufacturers and the National Electrical Manufacturers Association urged simplification of present provisions for figuring the tax base on producers' sales of appliances directly to retailers.

An IAM spokesman said that if the Federal excise tax on appliances can't be removed, then the tax base should be broadened to cover more nearly the entire range of consumer durable and soft goods, excluding perhaps only food and drugs.

REFRIGERATION COMPONENTS TAX REPEAL URGED

Eventual repeal of the tax on appliances and electric housewares and immediate repeal of the tax on refrigeration components and automatic water heaters was requested by H. G. Blakeslee, vice president and general manager of Cory Corp. and chairman of the NEMA excise tax committee.

As the subcommittee concluded two weeks of hearings, Dan T. Smith, top tax assistant to Treasury Secretary Humphrey, told the group that the Treasury opposes any cuts now in individual income taxes, corporate taxes, or excise taxes.

However, Rep. Forand (D., R. I.), subcommittee chairman, indicated that the Treasury's attitude will not keep him from recommending excise cuts if he finds particular excise taxes discriminatory or burdensome.

Following the hearings, the subcommittee decided to meet Dec. 27 to vote on proposals for excise tax changes. In the meantime, Treasury and Congressional tax staffs should try to agree on as many proposed changes as possible, the lawmakers said.

The subcommittee met recently to discuss its report to the full committee but decided to postpone this decision while the staffs try to reach agreement.

Presumably, suggestions on which the staffs reach agreement will be approved by the subcommittee when it meets after Christmas. It will also take up then proposals for changes in recommendations which the subcommittee submitted to the full committee last spring.

These change plus relatively non-controversial new changes would be passed on to the full committee in January.

Tyler To Enlarge Plant; Sells Freezer Division

NILES, Mich. — Construction has been started on a 40,000-sq. ft. enlargement of the Tyler Refrigeration Corp. plant here, according to Robert L. Tyler, president.

The new plant addition will provide for extension of present production assembly lines; a complete revision of the finishing department, including the introduction of automatic conveying equipment; and doubling the size of the welding section.

Similar additions are also being made at the plant of Wilson Refrigeration, Inc., the Smyrna, Del. division of Tyler Refrigeration. Both moves have been made to meet growing product demand, it was said.

Sale of the Harder-Freez Div. plant at Cobleskill, N. Y. to the Remington-Rand Div. of Sperry Rand Corp. was also announced by Tyler, who said this followed a decision to discontinue the production of home freezers.

The present Tyler line includes complete display and storage equipment for all types of perishables, including frozen foods, for supermarkets, food stores, restaurants, hotels, and institutions; adjustable metal shelving; vending machines; beverage coolers; and beer dispensers.

Wilson Refrigeration makes a full line of bulk and can milk coolers for dairy farms.

U. S. Grand Jury Probes Sheet Metal Local on Anti-Labor Racketeering

CHICAGO—Widening its investigation of labor union racketeering, the December Federal grand jury recently launched a probe of the Sheet Metal Workers Union, Local 73, by hearing eight witnesses.

The jury is looking into reports of possible violations of the Hobbs anti-labor racketeering act, according to John J. Quan, assistant United States attorney. Involved, he said, is a current Federal construction project whose payrolls allegedly were padded by hiring unnecessary workers.

Three of the witnesses included an official of Gencor Corp., Canton, Ohio; a field superintendent of Turner Construction Co.; and the central district construction and maintenance manager of Sinclair Oil.

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Not one pound of H & H copper tubing ever reaches the customer without passing through this furnace, the finest that skilled engineering and money can provide. The result is tubing with a finish that is always uniform, always permanent, always extra clean and bright.

Grain Size Control

Constant laboratory checks assure the customer that *his* grain size and temper specifications will be maintained.

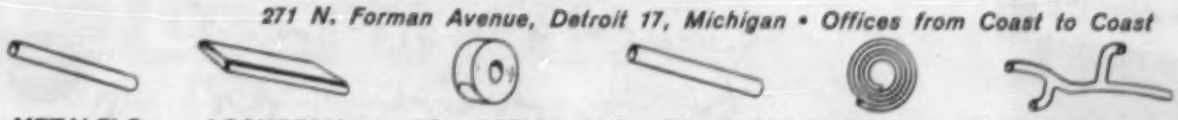
Straight lengths are available in a range of sizes from 3/32" O.D. through 1¾" O.D. in wall thicknesses of .065 and lighter. Standard 50' refrigeration coils are available in sizes from ⅛" O.D. to and including ⅝" O.D. In capped, plugged or open ends.

Originators and Sole Makers of METALFLO Tubing

Expect the BEST brass and copper products from

H & H Tube
AND MANUFACTURING COMPANY

271 N. Forman Avenue, Detroit 17, Michigan • Offices from Coast to Coast



METALFLO LOCKSEAM COIL STRIP AND SEAMLESS TUBING TUBULAR PARTS

Inside Dope

By GEORGE F. TAUBENECK

(Concluded from Page 1, Col. 1)

cake," worried the mother of home-from-the-party Jerry.

"Huh-uh. I just asked her for her cake recipe to take home. She gave me three more helpings!"

Dialing "information," a moppet requested the number of a neighborhood movie house.

"That number," singsonged the information gal, "is in your telephone directory."

"I can't look it up there," piped back the small voice. "I'm standing on the telephone directory."

"I am thankful I wear glasses," surprised a smart tyke. "They keep boys from fighting me, and girls from kissing me."

"Teacher called me a beaver today," announced Alice.

"Good girl," congratulated Daddy. "That means you are a hard worker."

"No, Daddy. I chew my pencil."

Parents Unincorporated

According to Frances Mayfarth, in a kindergarten two girls and a boy played "house" for three days.

Whenever he moved, the girls yelled at him. Frequently they handed him grocery orders, demanded that he do this or that, never permitting him choice or a voice on anything.

On the third day, with tears in his eyes, the young fellow appealed to the teacher. "I'm tired just being a daddy and being bossed by those girls. Please make them let me be the baby once in a while."

Little boy, to mother: "Mom, can Freddie and I go out and listen to Daddy put on the tire chains?"

Age Has Its Boons

During the Cosmetologists Association convention at the Sheraton Cadillac hotel in Detroit, a hairdresser asked waitress Bernice Scheve if she would lend herself to a demonstration. Mrs. Scheve has gray hair and the coiffure artist wanted to dye it.

"Not me," replied Mrs. Scheve. "In the first place, my son and husband wouldn't recognize me. And, furthermore, the Christmas rush is coming and I get a lot of seats on buses with my gray hair."

Home from the wars, a Missouri lad tried to make himself useful around the house. First thing he fixed was a stalled heirloom "grandfather clock."

That night its bellringing mechanism went haywire, and "struck the hour" 28 times.

"Son!" shouted the G.I.'s pa, "get up, get up right now. It's later than I ever knowed it to be."

Spike Jones claims the distinction of turning down Elvis Presley when he applied for a job some years back, Spike says his verdict was: "Young man, go back to stealing hub caps. You'll never make it in show business."

Last Gasps

Few candidates admit that they need or use ghost writers for their speeches. Most do, of course.

Douglas McKay made a revealing "slip" during his unsuccessful 1956 campaign for the Senate (Oregon). After reading a prepared speech approximately 90 minutes long he looked up and innocently disillusioned:

"Now I wish to add a few words of my own."

Lugging a big suitcase and a small bag, this fellow appeared before a theatrical agent. From the small bag he extracted a heavy-noggined hammer.

"For the high spot of my strong man act, a beautiful blonde assistant whangs me on the head with this hammer."

"Hmm, not bad," cigarred the agent. "Uh, what's in the large suitcase?"

"Aspirin."

Groaners

Bad-tempered street car conductor in San Francisco threw a patron out of his cable-car, broke his neck.

Convicted of murder, this street car conductor was sentenced to the electric chair. Three times his executioners tried to electrocute him. He survived each shock. Sentence having been executed, the State released him.

To newspaper reporters who besought an explanation of his resistant existence he mumbled: "I must be a poor conductor."

His subsequent murder was ruled Justifiable Homicide.

Gags of the Week

A newly crowned Hollywood queen who was very sexy and very blonde told a reporter that her real love was a 60-year-old banker in Wall Street. "Everytime he phones me," she purred, "I get chinchillas up and down my spine."

"I'm going to be an airline hostess so I can meet a lot of men."

"Couldn't you meet men in a less dangerous job?"

"Not strapped down."

Avco Drops Crosley, Bendix Div. Names

CINCINNATI — Avco Mfg. Corp. has discontinued use of the the names Crosley and Bendix Home Appliances divisions and Crosley Government Products division.

All activities were consolidated under one operation here at 1329 Arlington St. known as Avco Mfg. Corp., Crosley Div., according to Avco vice president and division president, Chester G. Gifford.

At the beginning of November, Avco announced that its Crosley and Bendix Home Appliances divisions would discontinue their appliance, radio, and television set businesses on Nov. 30. On the same day, Philco Corp. took over the Bendix home laundry equipment business of Avco throughout the world, excluding Canada.

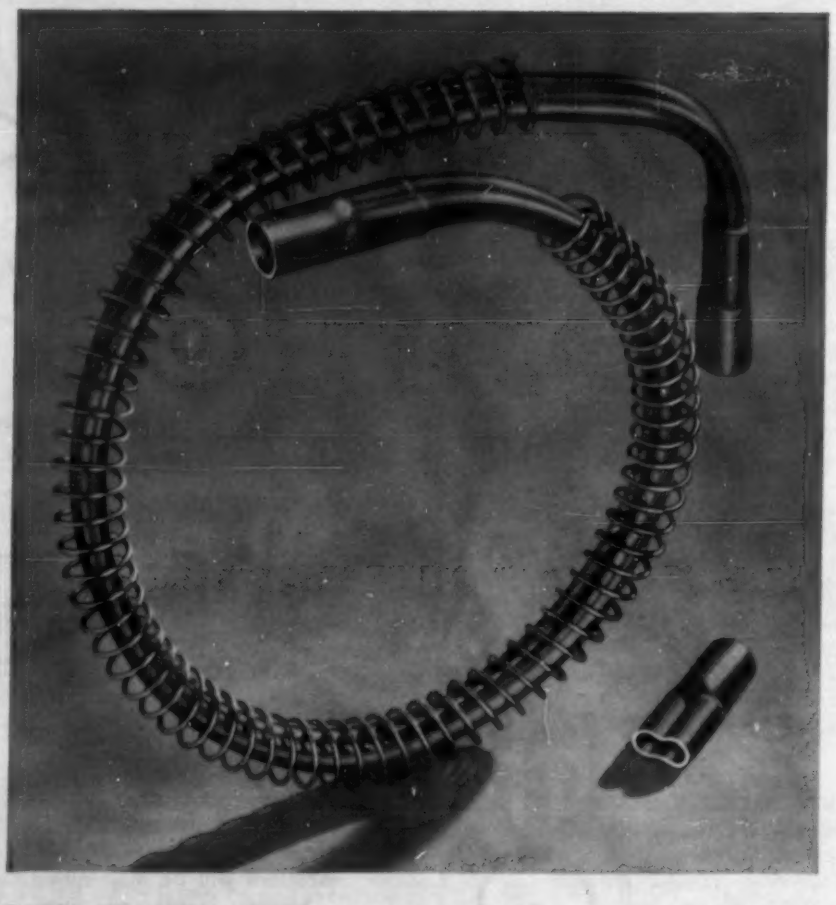
IDEAL
Speed-Freeze
PRODUCTS

BEVERAGE COOLERS AND INSTANTANEOUS DRAFT BEER COOLERS.
(With Refrigerated Faucets)

WRITE
IDEAL COOLER CORPORATION
2953 EASTON AVE. - ST. LOUIS 8, MO.

Get these extras from Bundy Tubing

1. Engineering and design service



Problem: Manufacturer needed extra-sturdy refrigeration-compressor discharge tube for new, smaller, more efficient compressor.

Solution: Discharge tube uses *double* tube for extra strength, superior resistance to vibration fatigue; the two separate tubes are brazed only at end fittings. Steel coil-spring sheathing muffles the noise that results from the vibration of this part. Discharge tube is designed so that O.D. of two tubes together is the same as O.D. of bifurcated Bundyweld end fittings, allowing spring to be slipped on after fittings have been brazed to double tube. Lower right: detail of formed Bundyweld end fitting.

Here's a sample of the help Bundy engineers can give you with your design problems

A leading manufacturer of refrigeration compressors—and a long-time Bundy customer—needed an extra-sturdy compressor discharge tube for use in its new, smaller, more efficient compressor. Together, Bundy® engineers and the manufacturer worked out this ingenious solution (left).

Bundy customers have come to expect this kind of teamwork when they deal with Bundy. Bundy engineers take pride in solving tricky tubing problems; and you benefit from their years of experience.

You benefit, too, from the inherent qualities that make Bundyweld® Steel Tubing the world's finest small-diameter tubing. Bundyweld is the only tubing double-walled from a single metal strip, copper-bonded through 360° of double-walled contact.

Bundyweld is leakproof; thinner-walled, yet stronger; has high thermal conductivity; has high bursting strength. Bundyweld is not only the safety standard of the refrigeration industry; *it is used in 95% of today's cars, in an average of 20 applications each.*

BUNDYWELD IS DOUBLE-WALLED FROM A SINGLE STRIP

Bundyweld starts as a single strip of copper-coated steel. Then it's . . .

continuously rolled twice around lutersally into a tube of uniform thickness, and

passed through a furnace. Copper coating fuses with steel. Result . . .

Bundyweld, double-walled and brazed through 360° of wall contact.

← NOTE the exclusive Bundy-developed beveled edges, which afford a smoother joint, absence of bead, and less chance for any leakage.

For more information about products advertised on this page use Information Center, page 16.

Amana Offers Business Ideas, Says That:

Independent Distributors, Dealers Need Food Plan, Builder, Air Conditioning Specialist Salesmen To Improve Profits

CEDAR RAPIDS, Iowa — A detailed merchandising plan to aid independent dealers and distributors retain and improve their positions and profits in the appliance business was outlined here at the annual distributor convention of Amana Refrigeration, Inc.

Specialty departments and specialized sales programs on the distributor level and specialty selling on the retail level were urged and detailed for the 500 distributor principals, sales managers, and representatives from all over the U. S., Canada, and Hawaii who met here.

Keynote of the two-day conference was sounded by George C. Foerstner, executive vice president of Amana, who, after reporting that 1956 "has been the company's best year in history," declared:

"The opportunity never was brighter for the independents in the appliance business who can provide consumers with superior products, sold by superior methods of specialized selling."

To Continue as Specialized Mfr.

Amana intends to continue as a specialized independent manufacturer in the refrigeration field, Foerstner said.

"By specializing we can develop products that offer distributors and dealers the unique assistance to sell these products.

"There is a tremendously large profitable market for hard-working independent distributors and dealers who match our efforts as a manufacturer with aggressive, specialty selling down through the merchandising chain," Foerstner said.

An organization and plan for independent distributors was blueprinted by Walter A. Wendler, vice president and assistant general manager, and by J. A. Rishel, Jr., general sales manager, who chaired the meeting.

Because Amana sells products in three different fields—food plans, appliance stores, and builder sales—it is essential for distributors to establish three kinds of specialized manpower, to concentrate on these fields.

"This kind of specialty organization has paid rich dividends for many distributors," he added, citing the experience of two groups of five distributors each, in the first nine months of 1956. The first group, operating with a food plan manager in a market one-fourth the size of the other, sold four times as many freezers, he stated.

Specialists Added To Field Force

Plans to broaden Amana's progrom of field specialists to assist dealers and distributors in organizing and executing specialty selling programs also were announced.

Builder specialists and air conditioning specialists will be assigned to the field, on a zone basis, paralleling the current staff of food plane zone sales specialists. First named as air conditioning specialists were Robert Weigle of Washington, D. C., and Stan Dunski of Oklahoma City.

These forecasts of industry sales in 1956 and 1960 were made by Wendler: freezers, 1,040,000 and 1,250,000; air conditioners, 1,500,000 and 2,200,000; and refrigerators, 4,000,000 and 4,600,000. Freezer replacement market for 1957 was estimated at 130,000 units.

Continuing opportunities for profitable volume in freezer-food plans were described by W. J. Dickinson, Amana's director of food plan sales.

"The food plan still moves more than half the freezers sold in this country. This is the sales approach that has skyrocketed freezer sales from 210,000 in 1946 to more than 1,000,000 in each of the past four years," Dickinson said.

Amana intends to continue and accelerate its food plan zone sales program, and to continue promotion of the Amana Plan for Better Living, which, Dickinson said, has been an "eminent success."

To successfully pursue the builder market, with its totally different outlets from other distribution fields, distributors must employ builder sales specialists, declared Joseph E. Guertin, Amana's newly-appointed director of builder sales.

In addition, distributors should join local NAHB chapters, subscribe to building report services, initiate a direct mail program to builders and architects, franchise building trade dealers and kitchen remodeling dealers.

E. W. Lyon, director of air conditioning sales, announced details of a sales incentive program which offers dealers all-expense paid 5 to 14-day trips to the Roney Plaza hotel in Miami Beach, Fla., which dealers may take at any time during the year, at their convenience.

Conditioning Sales Program Highlights

Highlights of the air conditioner merchandising program he presented included a free pre-season selling kit, new point-of-sale displays, and an unprecedented advertising program.

Merlin E. Morris, Amana's director of advertising and sales promotion, announced the largest advertising program in Amana history — about 50% ahead of 1956.

In addition to continued sponsorship of the Phil Silvers Show, on a 161-station CBS network, with commercial by Laraine Day, featured will be a record 200-page consumer and trade magazine advertising schedule.

To aid dealer promotion on the local level, there are starter freezer and freezer-plus-refrigerator promotion kits, a Deep-freeze kit, and an air conditioner kit.

Thomas O. McDavid, vice president of Commercial Credit Corp., Baltimore, in discussing the current money picture, said, "There is certainly no doubt that the demand for money from all segments of industry has made money tighter. At the same time, borrowing rates are at their highest peak in over 20 years.

"Credit may be dear, but it is still available generally to those who have demonstrated in the past that they are good credit risks," the financial expert declared.

standard of the refrigeration industry:

2. Fast, economical fabrication

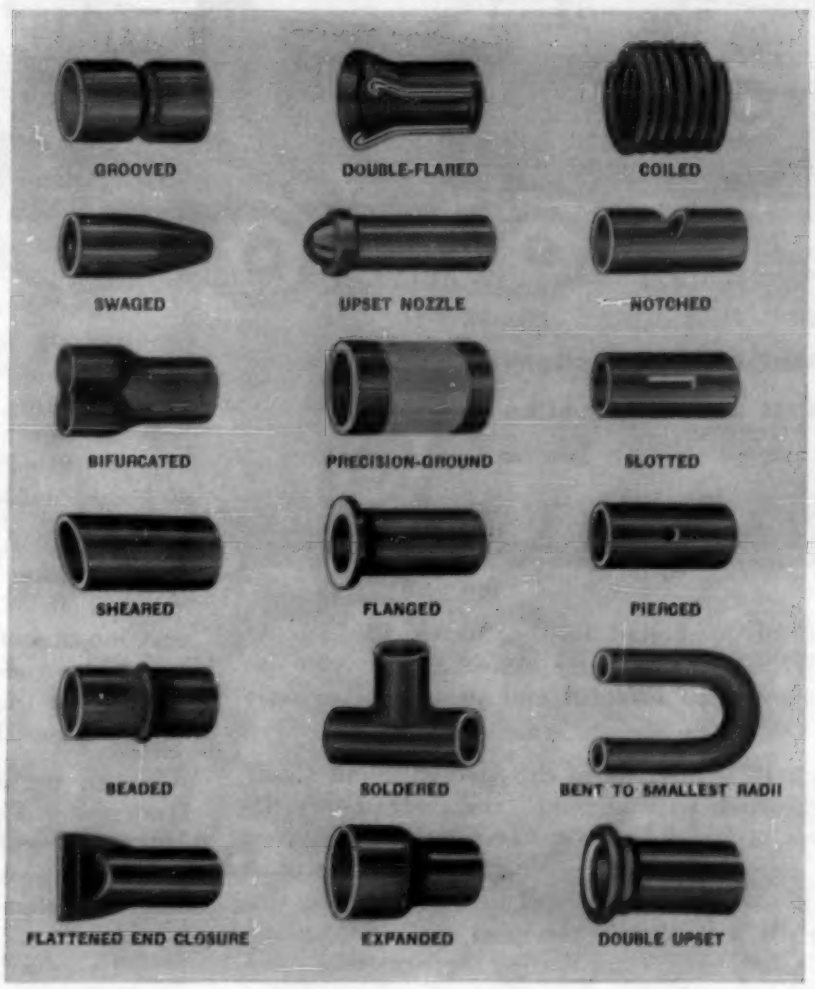
Versatile Bundyweld Tubing can solve the toughest tubing fabrication problems

If you think it can't be done with tubing, it's a challenge to Bundy®. For years, Bundy has specialized in working with customers and prospects, solving the insolvable. A unique combination of imagination and experience, plus the extreme versatility of Bundyweld® Steel Tubing, has paid off again and again for our customers.

Check first with Bundy for workable solutions to your tubing fabrication problems. We'll gladly work with you at the design stages of a new product; we'll also help you iron out kinks in your present tubing designs. Hundreds of manufacturers have used this Bundy service to advantage.

If you fabricate parts, Bundy will help you speed production, cut costs. Or, if you prefer, we will fabricate your parts quickly and economically, to your exact specifications; package and ship them right on schedule—clean, bright, ready to use.

Bundyweld Tubing, Bundy engineers, and Bundy fabrication facilities form an unbeatable combination that will solve *your* tubing problems. Call, write, or wire us today!



Shown above are but a few of the fabrication operations which are possible with Bundyweld Steel Tubing. Many of these, and others not shown, were developed through solving a specific problem brought to us by a customer or prospect. Bundy invites you to avail yourself of this design service.

BUNDY TUBING COMPANY • DETROIT 14, MICHIGAN

BUNDYWELD® TUBING

Bundy Tubing Distributors and Representatives: *Cambridge 42, Mass.:* Austin-Hastings Co., Inc., 226 Binney St. • *Chattanooga 2, Tenn.:* Poirson-Deakins Co., 823-824 Chattanooga Bank Bldg. • *Chicago 32, Ill.:* Lapham-Hickey Co., 3333 W. 47th Place • *Elizabeth, New Jersey:* A. B. Murray Co., Inc., Post Office Box 476 • *Los Angeles 58, Calif.:* Tubesales, 5400 Alcoa Ave. • *Philadelphia 3, Penn.:* Rutan & Co., 1717 Sansom St. • *San Francisco 10, Calif.:* Pacific Metals Co., Ltd., 3100 19th St. • *Seattle 4, Wash.:* Eagle Metals Co., 4755 First Ave., South *Toronto 5 Ontario, Canada:* Alloy Metal Sales, Ltd., 181 Fleet St., E. • Bundyweld nickel and Monel tubing are sold by distributors of nickel and nickel alloys in principal cities.

WORLD'S LARGEST PRODUCER OF SMALL-DIAMETER TUBING • AFFILIATED PLANTS IN AUSTRALIA, ENGLAND, FRANCE, GERMANY, AND ITALY

OF SPECIAL IMPORTANCE TO YOU:

AIR CONDITIONING "SHOW CASE" ISSUE

March 18

Including Specifications On 1957 Air Conditioners

Make sure the largest air conditioning dealer-contractor group in history sees your sales message in the Show Case Issue.

YOU DON'T HAVE MUCH TIME!

Closing date for the March 18 "Show Case" Issue is March 8—so start making plans for your sales attack now!

Your advertisement in the March 18 issue of the NEWS is of special importance to you—so make sure it's forceful and prominent as only you can make it!

March 18 is the date of the special "Show Case" issue, which will be read—and re-read—by the largest air conditioning audience in history. Key air conditioning people from coast to coast and around the world will be watching for this issue. It will contain the most complete line-up of factual air conditioning information ever assembled.

"Show Case" will present detailed, up-to-the-minute specifications on all makes and models of packaged residential and commercial air conditioning equipment—**including your line!** Your products—and your competitors'—will be presented for inspection and fact-by-fact comparison. In addition, there will be dramatic new fact-filled market studies, new applications, and new field-proved sales methods.

Manufacturers, distributors, contractors, and dealers alike will be receptive to your sales message in "Show Case." They'll be in a decision-making mood . . . a **buying** mood! Your advertisement will be seen again and again throughout the year because readers will keep "Show Case" handy for constant reference.

Advance requests for extra copies and orders from non-subscribers are already being received. Make sure your products are given the prominence and prestige they deserve—**start planning your display in "Show Case" right now!**

There will be no increase in rates for "Show Case"—closing date is March 8. Call your NEWS' representative today for a space reservation.

AIR CONDITIONING & REFRIGERATION **NEWS**

The Newspaper of the Industry

450 West Fort Street, Detroit 26, Michigan

NEW YORK, 521 Fifth Ave., MUrray Hill 2-1928—9, Robert M. Price.
CHICAGO, 134 S. LaSalle St., FRanklin 2-8093, Allen Schildhammer.
DETROIT, 450 West Fort St., WOodward 2-0924, J. B. Sullivan.
LOS ANGELES, 4710 Crenshaw Blvd., AXminster 2-9501, Justin Hannon.

ABP ABC AUDITED PAID CIRCULATION

The Newspaper That Carries More Advertising By Far Than Any Other Publication In The Field.

RCA Whirlpool '57 Room Units Feature Flexible Air Control, 'Low, Slim' Look

ST. JOSEPH, Mich.—Reduced in every dimension, most models in the 1957 line of RCA Whirlpool room air conditioners feature a new low, slim silhouette, Whirlpool-Seeger Corp. stated.

The new line is made up of 16 models, "designed for every room air conditioning requirement and for special installations—through the wall or transom, in casement windows, and in double-hung windows."

An electronic filter is featured in top-of-the-line "Imperial" models. Also in the line are "Supreme," "Custom," and "Deluxe" models.

"Flexible air direction control shunts cooled air to any part of the room without creating drafts," it was stated. "Air flow direction is adjustable in a complete circle. On most of the new room air conditioners, two fan speeds are provided."

On Imperial models, six pushbuttons control cooling speed, fan speed, exhaust, and shutoff. A sliding vent and exhaust switch and a sliding thermostat control "assure ease of operation."

Imperial models include a ¾-hp. unit for 115-volt, 7.5-ampere operation; a 1-hp. unit for 115-volt, 12-ampere operation; a 1-hp. unit for 230-volt operation; and a 1½-hp. unit for 230-volt operation.

Designed for through-the-wall as well as window installation, Supreme models have no side louvers. Pushbuttons control fan speeds, cooling speeds, and shutoff. Thermostat and damper are adjustable by rotary control.

Included among Supreme models are 1-hp. unit for 115-volt, 12-ampere operation; a 1-hp. unit for 230-volt operation; and a 1½-hp. unit for 230-volt operation.

Included among Custom models are a 2-hp. model for window installation, two reverse cycle models which provide heating as well as cooling "at the flip of a switch," and two models specifically designed for casement window installation.

All Custom units feature a variable speed fan switch, which may be set at the exact speed desired. The 2-hp. unit and the reverse cycle models have four pushbutton controls and rotary damper switch. Casement models feature rotary controls for damper, thermostat, cooling.

Custom models include a 2-hp. unit for 230-volt operation; a reverse cycle ¾-hp. unit for 115-volt, 12-ampere operation; a reverse cycle 1-hp. unit for 230-volt operation; a casement ½-hp. unit for 115-volt, 9.5-ampere operation; and a casement ¾-hp. unit for 115-volt, 12-ampere operation.

Included among Deluxe models are a ¾-hp. unit for 115-volt, 7.5-ampere operation; a ¾-hp. unit for 115-volt, 10.2-ampere operation; a 1-hp. unit for 230-volt operation; and a 1½-hp. unit for 230-volt use.

2 Emerson Firms Settle Label Row

NEW YORK CITY—Emerson Electric Mfg. Corp., St. Louis, and Emerson Radio & Phonograph Corp. here, have reached a settlement in their dispute over use of the label "Emerson" on air conditioners, it was reported.

Emerson Electric agreed to use just the name "Northwind" on its units during the period 1958-1960 and Emerson Radio will use just "Quiet-Cool." Until then, the firms are using "Emerson - Northwind" and "Emerson-Quiet-Cool." After 1960, Emerson Electric can use an "Emerson-Electric" label.

Philadelphia Area Distributors Boost October Room Unit Sales 137% over '55

PHILADELPHIA — October sales of room air conditioners by distributors serving the five Pennsylvania counties around Philadelphia jumped 137% over the same month of 1955, the Electrical Association of Philadelphia reported recently.

Room air conditioner sales for the first 10 months of the year were 37% ahead of last year. More than 51,000 units have been sold by distributors in the 10-month period.

Sales of household refrigerators were down 8% for the month and 10% for the 10 months. Freezer sales were off 10% for October and 38% for the first 10 months, it was added.

This report covers sales in Bucks, Chester, Delaware, Montgomery, and Philadelphia counties.

Unit sales of these appliances for October and the 10 months were as follows:

Appliance	Oct. '55	Oct. '56	10 Mos. '55	10 Mos. '56
Air Conditioners	209	496	37,272	51,041
Refrigerators	4,939	4,551	64,296	58,065
Home Freezers	596	535	8,930	5,568
Clothes Dryers	2,181	2,388	11,189	15,446
Washers, Automatic	6,141	7,293	50,694	55,555
Washers, Non-Automatic	640	2,179	10,776	14,179
Dishwashers	577	849	4,990	7,077
Ranges	1,451	2,080	17,016	17,386

BE SURE—ask for **Anaconda** by name

Be sure your job can stand up in service. ANACONDA Refrigeration Tube is 99.9% pure copper, phosphorus deoxidized—clean and dry—made to meet ASTM Specification B280-55T.

Be sure you can make a fast, easy installation. ANACONDA Refrigeration Tube is consistently uniform in gage, size, and temper. ANACONDA Fittings, Vibration Eliminators, and Tube are built to match.

Be sure you get all these extra values — to protect your reputation and your profits, ask for Anaconda refrigeration products by name.

See your Anaconda Distributor for prompt, convenient, and reliable service on all of your requirements—tube, pipe, fittings, and Vibration Eliminators. The American Brass Company, Waterbury 20, Conn. In Canada: Anaconda American Brass Ltd., New Toronto, Ont.

ANACONDA®
REFRIGERATION PRODUCTS

DEAN
COLD PLATES
for Ice Bank
Air Conditioning
MANY SHAPES MANY SIZES
MANY METALS

Job-Tailored
to your exact size requirements, Dean Cold Plates are low in first cost and in operating costs. Write for catalog
DEAN PRODUCTS, INC.
1042 DEAN STREET
BROOKLYN 38, N.Y.
STerling 9-5400

Manufacturers, Distributors Discuss Circumvention of Natural Channels

(Continued from Page 1)

the Industrial Relations Committee, he noted.

One leading manufacturer has discontinued entirely sales of ice cream cases to national dairy and ice cream manufacturers, and advised them they must deal with their distributors, Wiedemer reported.

In an address, President Sidney G. Taylor of Des Moines, Iowa, declared:

"The manufacturer wants pleased customers who will come back and buy again.

"Two parts are necessary for refrigerator equipment to please the customer. It must be well designed and built. The other part is it must be well selected, installed, and serviced, and this is the job of the distributor.

"The hottest subject before this convention, one on which more pussy-footing is done than on any other, is why the customer, or the manufacturer, should try to circumvent our natural channel of distribution. Yet it is being done by almost every manufacturer every day.

"When a manufacturer says equipment sold through their national users department represents as much volume as sales through distributors, something is wrong.

"A new supermarket is planned by a local architect, built by a local building contractor, wired, plumbed, and painted by local contractors, and all expect to profit from materials and services.

"We are contractors for furnishing and installing interior equipment. Our work calls for important and specialized skills. Somehow we have gotten partially off the track. How has it happened? Do I have the answer?

"I am afraid not, but I have some ideas. The equipment for the supermarket could best be handled by a distributor.

"We must continually increase facilities, become so dependable and important to the supermarket it cannot get along without us.

"We can increase equipment and stock, continually train each member of our organization to better serve the supermarket, have on hand what is needed when needed, treat the supermarket owner fairly by making a legitimate but not excessive profit, make it our business to see equipment gives continuing satisfactory service, and be where we can be reached every hour, every day, when needed.

"There is value to these services. With all due respect to our associate members, these services cannot be bought by paying a 5% agent's commission."

Market Operator Wants Distributor Services

Vincent J. Nevolo of San Francisco, president of Westlake Foods, Inc., spoke on "Why I Patronize My Local Refrigeration Distributor."

Nevolo said as a supermarket operator he wants relations with a commercial refrigeration company that has an efficient service department.

"We might buy our refrigeration at wholesale prices, and believe me, we have been offered those prices. But I want to be relieved of all responsibility of engineering, and of maintaining my refrigeration equipment."

Four executives of manufacturing companies made up the first panel on the program, talking on the subject: "If I Were a Distributor. . . ."

Store Planning, Engineering

Victor Steg, regional accounts manager for C. V. Hill & Co., Inc., spoke on "If I Were a Distributor I Would Offer Store Planning and Engineering Services to the Following Extent."

Among other things, Steg said: "It is important you distributors follow through with the architect. Very few architects are familiar with stores and store problems. . . You can help with the electrical layout, list the circuits and voltages. . . . Some make store lighting plans. . . . If trenches are to be used a cross section will help."

J. W. Krall, president of McCray Refrigerator Co., Inc., talked about "If I Were a Distributor I Would Have the Following Sales Pricing Standards," and proceeded to graphically illustrate his meaning with detailed figures projected upon the screen.

J. A. Brinkoeter, first vice president of Friedrich Refrigerators, Inc., discussed "If I Were a Distributor I Would Organize My Service Department as Follows." He went into the qualifications of an experienced service manager and the management points he should carry out.

Ray L. Greene, sales manager for Tyler Refrigeration Corp., spoke on the subject "If I Were a Distributor I Would Approach Voluntary Chains and Supermarket Operations as Follows. . . ."

Greene advocates a complete store development service, with the distributor considering all the facets of location, land, investment, building, personnel, equipment, opening, maintenance and service, and factory service.

During the question-and-answer period for this panel Greene was asked how, after giving this service, a distributor could prevent his competitor from taking advantage of it.

'Romance' Your Service

Greene said it would depend on how well the distributor had learned to know his customer. "You must romance your service," Greene said. The issue of cost was raised. Greene said this depends on whether the distributor has an architect or some one in his organization to do it. Sometimes the customer will pay for this service.

Supposing the plan cost a distributor $250 and there were four competing for the business, how does the distributor recover? Greene was asked. The answer was that if a distributor puts his offered plan on a separate charge basis it will create an unfavorable situation if he tries to collect for it.

Questioned about his cost analysis on equipment, Krall replied that a commercial refrigerator distributor is a horse trader. His company wants every distributor to realize a profit.

No clear-cut reply was made when a member asked about the relief from the situation arising when a distributor gives a small chain a competitive price, and the factory representative offers the chain the same price they give their wholesaler—how can the distributor combat that?

An eastern distributor said his company charges 3% of the entire charge for the plan service they render to the architect. Sherman W. Bushnell of Seattle said his company finds it can do these plan services for the supermarket better than the licensed consulting mechanical engineers, but they seem to resent a refrigeration distributor rendering this service.

President Taylor said nine times out of ten his company gives the layout to the architect. George F. Weidemer of Rochester, N. Y., said his company has recently gone to a 3% charge for plans given to the architect. He said the architect makes a good markup on the distributors' contract work.

W. J. Stepflug, president of Hussmann Refrigeration, Inc., made the Monday luncheon address on the topic "What Is a Good Distributor?"

Profit Sharing Plan

Ray Winther of San Francisco, president of Ray Winther Co., spoke on the subject "Is Your House In Order?" He described development of suitable management talent in all departments and giving them an opportunity to buy an interest.

Winther said three years ago his company set up a profit-sharing plan to cover non-union employes, salesmen, office help, and top management. The plan is set up to qualify under section 165(a) of the Internal Revenue Code, which permits the company to contribute annually an amount up to a maximum of 15% of participants' aggregate salaries.

Monday afternoon's panel dealt with the subject "Does a Complete Line of Food Store Equipment Enhance a Distributor's Service and Profit?"

I. W. Shell of Chicago answered "Yes, with reservations. Assuming you are fully equipped to render store planning and engineering service, supply color schemes, and even merchandise the store, it is still not enough unless you can offer almost all the equipment for the entire job," Shell said.

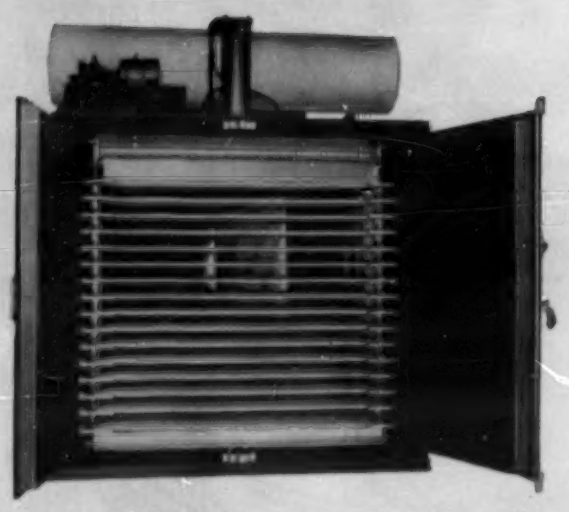
Sam W. Davis, Jr. of Greensboro, N. C., also gave an affirmative answer to the panel subject.

"The distributor's sales display should include a complete line of equipment, shelving and other market items, packaging materials and cutting materials, and an active air conditioning department which is the fastest growing field," Davis said.

L. E. Humphreys of Concord, N. H., said distributors should

(Concluded on next page)

NOW! FASTER FREEZING OF PACKAGED FOODS!



"The DOLE Double Contact Plate Freezer"

● "Pass-through" operation ●

DOLE patented Vacuum Cold Plates ●

Available with or without cabinet ●

Ammonia, Freon or brine models available

VISIT US IN BOOTH 31
FROZEN FOOD SHOW — MIAMI BEACH
JANUARY 6-7-8-9

DOLE REFRIGERATING COMPANY
5920 NORTH PULASKI ROAD, CHICAGO 30, ILLINOIS
103 PARK AVENUE, NEW YORK 17, N. Y.
In Canada: Dole Refrigerating Products Limited
44 Elgin Street, Brantford, Ontario

WRITE FOR ENGINEERING CATALOG SECTION F.E

DOLE THE Cel LINE

Freze-Cel DOUBLE CONTACT PLATE FREEZER

NOLIN Moisturizer VEGETABLE CASE

AVAILABLE IN 5' - 8' - 10' SIZES

If It's Not a NOLIN, It's Not a MOISTURIZER

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We're SPECIALISTS in

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AIR CONDITIONING
ELECTRIC MOTORS

PARTS and Supplies

WE SAVE YOU MONEY because we're specialists, with the largest selection in the world—over 10,000 items—at lowest prices. They're all illustrated, priced and described in our newest HARRY ALTER DEPENDABOOK—"the standard of the trade."

Write on your letterhead for the DEPENDABOOK

WHOLESALE ONLY The HARRY ALTER CO., Inc., 1717 S. Wabash Ave., Dept. A, Chicago 16, Ill.

For more information about products advertised on this page use Information Center, page 16.

NCRSA Studies Profit Picture--

(Concluded from preceding page)

investigate new supplemental lines of supermarket equipment to carry in order to meet the needs of market owners. Humphreys said $50,000 is the average cost of supermarket refrigeration equipment.

Other equipment will cost $5,000 to $20,000.

R. N. Mattingly, of Brantford, Canada, secretary-treasurer of Hussmann Refrigerator Co., Ltd., gave an address on "Know Your Costs" illustrated with slides to demonstrate the importance of budget control.

'To Protect Your Profit'

A four-man panel Tuesday morning dealt with the subject "To Protect Your Profit. . . ."

Fred E. Jacob of Los Angeles, owner of Jacob Market Equipment, spoke on "To Protect Your Profit, What Are the Best Ways of Financing?" Protecting paper sales contracts, and preventing banks from applying hold backs calls for using the manufacturer's blanket endorsement contract, Jacob said.

Robert L. Allen of San Francisco, general credit manager of D. Ghirardelli Co., Inc., talked on "To Protect Your Profit, What Constitutes a Good Credit Risk?" One of his points was that a good credit risk is "one that meets your requirement."

E. H. Thrower of San Francisco, vice president of C.I.T. Corp., spoke on "To Protect Your Profit, What Length of Terms Should Be Extended?" A sound procedure is a 10% down payment and five-year payment period, Thrower said.

D. P. Boothe, Jr. of San Francisco, president of Boothe Leasing Corp., spoke on "To Protect Your Profit, Should You Sell Equipment On a Lease Basis?" Boothe said the terms of the lease should provide the entire useful life of the equipment shall remain in the ownership of the lessee, the lease should be non-cancellable.

Sins of the Selling Man

A. W. McMullen of San Francisco, branch manager for National Cash Register Co., gave the Tuesday luncheon address on the subject of "Sins of the Selling Man."

He advised encouraging salesmen to make a plan for each day and follow the plan. His company makes a card available on which salesmen can list their route and calls in organizing their working day.

Tuesday afternoon's panel of three NCRSA members talked about "For Increased Profits, We Believe." R. J. Wischusen of Jersey City, N. J., said the key trouble spot is poor management control of overhead expenses.

Frank D. Stella of Detroit stressed that maintaining good records saves time and money. He cited a Dept. of Commerce report that showed 84% of all businesses that failed had inadequate records.

E. V. Williams of Los Angeles said increasing net profits calls for attacking the subject on several fronts. Among other things, he directed attention to trying to eliminate free service calls during the free period by having sold products that are properly engineered, well constructed, and as nearly as possible "trouble free."

Sam W. Davis, Jr. of Greensboro, N. C., was elected NCRSA president. Other new officers: Harry A. Hattenbach of Cleveland, first vice president; Milton I. Schwartz of New York City, second vice president; R. H. Winther of San Francisco, third vice president, (a new office established by the bylaws to give wider representation in sections of the United States); Dudley M. Cawthon of Miami, Fla., treasurer.

Newly-elected directors: J. D. Gardner, Nashville, Tenn.; H. E. Humphreys of Concord, N. H.; George A. Lucas of East Hartford, Conn.

NEWLY-ELECTED OFFICERS AND DIRECTORS were introduced at the close of the 10th convention of the National Commercial Refrigeration Sales Association in San Francisco. Left to right: H. E. Humphreys of Concord, N. H., director; Dudley M. Cawthon of Miami, Fla., treasurer; George A. Lucas of East Hartford, Conn., director; Sam W. Davis, Jr. of Greensboro, N. C., president; Milton I. Schwartz of New York City, second vice president; Harry A. Hattenbach of Cleveland, first vice president; Ray H. Winther of San Francisco, third vice president; and Marie H. Lawton of Philadelphia, executive secretary. (Newly-elected director J. D. Gardner of Nashville, Tenn., was not present).

Clark Introduces Prest-O-Matic Door

CHICAGO — Clark Door Co., Newark, N. J., recently exhibited a new item to aid in frozen food merchandising here before the National Association of Food Chains convention.

It was an "improved" Clark "Prest-O-Matic" electric cold storage door.

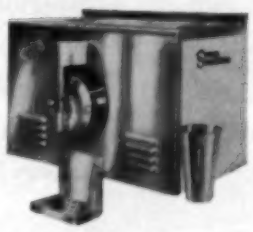
The display consisted of an electrically operated double-horizontal sliding freezer door, made of galvanized steel with polyurethane insulation foamed directly between two metal sheets.

It is said to combine lightness, structural rigidity, and insulation efficiency.

There's a REVOLUTION in the ICE CREAM INDUSTRY

New 207 SHAKEMAKER
Produces more than 500 12-oz. shakes per hour. Costs hundreds of dollars less than any other high-production machine. Measures only 14¾" wide.

New 215 SHAKEMAKER
Produces more than 300 12-oz. shakes per hour... more than others twice its price and size. Only 20" front to back. Two will go in 29½" width.



New 211 SHAKEMAKER
Lowest-priced shake machine on the market. Outproduces others twice its price and size. Perfect counter size. Only 19" high, 16" front to back.

From one end of the country to the other, all types of food operations are serving ice cream and shakes faster than ever thought possible. What's more, they're doing it at a lower food cost, and with dispensers occupying far less space than ever before. The big reason for this is Sweden's new Silver Anniversary line of advanced-design and trade-tested counter and floor model machines.

As a Sweden seller, you would have a competitively-priced line with sufficient margin for you. You would be trained and assisted by a factory-employed field representative and backed up by a program of consistent national advertising, direct mail and other promotion.

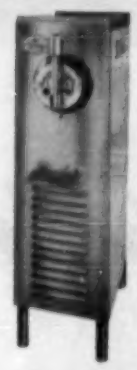
Sweden is the most widely known and accepted name in the soft-serve and malt-shake machine field.

If you're not now selling Sweden, write today for information about the territories still available.

SWEDEN

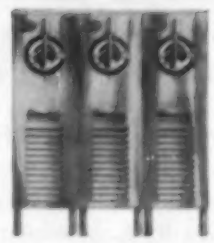
SWEDEN FREEZER MANUFACTURING COMPANY
Seattle 99, Wash.
Dept. Q-1

New 208 SOFTSERVER
Produces 20 gallons per hour . . . more than competitive machines costing hundreds of dollars more. Production partner to 207. Stands 52" high.



New 216 SOFTSERVER
Produces more than 10 gallons per hour . . . more than many higher-priced machines. Occupies little more than 2 sq. ft. Only 20" from front to back.

New 212 SOFTSERVER
Smallest completely self-contained freezer. High production. Priced so low that an operator can buy two for the price of some competitive machines.

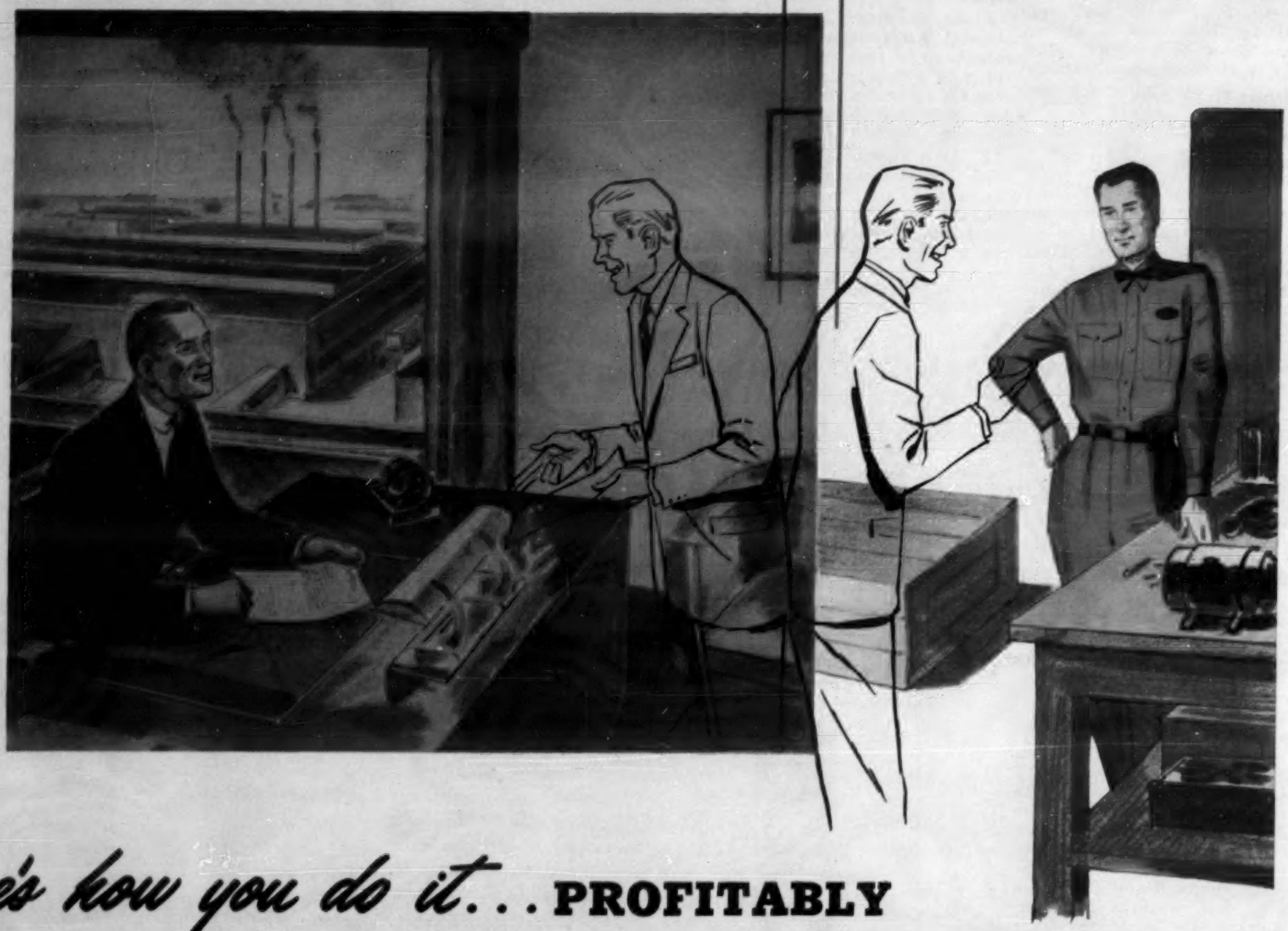


Each new Sweden floor model is complete in itself but can be combined with others to form a "packaged" unit of two, three or more machines. This revolutionary new flexibility permits an operator to join ShakeMakers and SoftServers together to suit his own individual production needs.

Sweden features include exclusive Air-O-Metric mix feed system and one-motion dispensing. Sweden machines are famous for simple, quiet operation. New 52" height is ideal for filling and cleaning. With Sweden, you have more to offer the prospect—more chances of making more sales!

If you're selling replacement parts...

YOU HAVE TO BE TWO PLACES AT ONCE!



here's how you do it... PROFITABLY

IN THE AIR CONDITIONING, HEATING, AND REFRIGERATION INDUSTRY

You sell the manufacturer. He's the man who can specify your product as original equipment and build automatic replacement parts volume. More manufacturers by far subscribe to, read and clip AIR CONDITIONING & REFRIGERATION NEWS than any other publication in the field. (A recent readership study of O.E.M. manufacturers reveals 93% of their executives read the NEWS). What better place to tell your selling story!

You sell the contractor and serviceman. They are the men who can order your product as a replacement part for the equipment they service. They, too, subscribe to, read and clip AIR CONDITIONING & REFRIGERATION NEWS. In Detroit, for example, 66% of dealer-contractors (who make 84.5% of all air conditioning and refrigeration installations) are paid subscribers. Again, what better place to put over your sales story!

To do your *first* selling job in *both* places where the *first* selling job is being done in *both* places—look *first* to the NEWS.

AIR CONDITIONING & REFRIGERATION **NEWS**

The Newspaper of the Industry

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CHICAGO, 134 S. LaSalle St., FRanklin 2-8093, Allen Schildhammer.
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DETROIT, 450 West Fort St., WOodward 2-0924, J. B. Sullivan.

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Walker Reviews 'Strange' Oil Actions

Copper, Iron React with Oil Constituents To Form Compounds Which Liberate Hot Compressor Metal, Make It Hydrophobic

KANSAS CITY, Mo. — Misbehavior of refrigerant oils was pointed out as the culprit in copper and iron plating of compressors by Dr. Walter O. Walker, dean of the division of research and industry at the University of Miami.

Speaking before the annual convention of the Refrigeration Service Engineers Society, Dr. Walker credited a German scientist, Heinz Steinle of Robert Bosch refrigeration firm of Stuttgart, with relating the occurrence and intensity of copper plating to certain constituents in the oil.

Dr. Walker reviewed for the servicemen some of the "strange" actions of oil in refrigeration systems and described a hydrophobic effect that broken down oil can produce on desiccants, pads, and filters.

Steinle has shown, Dr. Walker said, that the quantity of these certain constituents in oil is directly related to the intensity of copper plating.

He explained that copper and iron react with the constituents in the oil to form compounds which remain dissolved in the oil and later, in the oil-refrigerant mixture formed in the condenser and liquid receiver.

When these compounds reach the hot parts of the compressor, they are decomposed to liberate metallic copper and iron. These hot parts are the crank shafts, bearings, wrist pins, cylinder walls, pistons, and valve plates.

Oil Breaks Down, Sticks To Desiccant, Pads, etc.

"Some time ago," Dr. Walker continued, "it was discovered that oil under certain conditions not well understood could break down over a period of time and produce substances which deposited not only on the desiccant but also on pads, filters, etc.

"These materials were capable of making everything on which they settled hydrophobic. A drop of water could sit on them without being absorbed.

"Hydrophobic characteristics have been found on all known desiccants, pads, and filters.

"Careful study of the phenomenon has been made and it has been shown that, although the desiccant may not be capable of taking up a drop of water, nevertheless, it still has the ability to remove moisture from the refrigerant. This ability is only slightly less than that possessed by the desiccant which is non-hydrophobic."

Refrigerating Oil Has Only One Purpose

Dr. Walker emphasized that refrigerating oil serves but one useful purpose in a system. That is, it lubricates moving parts.

As all moving parts are located in the compressor, every effort should be made to confine the oil to that part of the system.

"This calls for an oil trap, if the ideal system is to be attained," he said.

He pointed out that oil is not a simple substance, but is a complex mixture of hydrocarbons in which are found minor quantities of other chemicals. This accounts, he said, for oil's sometimes strange behavior.

"It should be emphasized," Dr. Walker declared, "that a machine operating under conditions which produce a reaction between the oil and the refrigerant cannot be looked upon as a normal machine. This reaction occurs only around 350° F.

"However, all oil is heated up momentarily in the head of the compressor and consequently is subjected to conditions which may cause decomposition."

Dr. Walker noted that oil does not seriously reduce the ability of desiccants to pick up moisture. In some instances, he said, the desiccant is a little better in the presence of oil than without oil. Generally, however, the reverse is undoubtedly true enough, although the reduction is not serious.

Dr. Walker asserted that the waxing problem is almost a thing of the past now with modern oils.

On many occasions, he said, oil return has been faulty due to the fact that a suction line is too large and the gas cannot attain sufficient velocity to carry the oil. Experience has shown that when proper oil return is not occuring under these circumstances, the suction line should be reduced in size.

'Controlorama' Sets Attendance Mark of 6,951 In 16-City Tour

GOSHEN, Ind. — "Controlorama," educational road show of Penn Controls, Inc., recently completed its 1956 fall tour and set new midwest attendance records, the company announced.

Beginning in Indianapolis Sept. 13, the series concluded Oct. 22 in Peoria, Ill.

Controlorama played before 6,951 manufacturers, wholesalers, dealers, servicemen, and engineers in 16 cities for an average of 434 for each city and 409 for each meeting, it was pointed out.

The show has now made four sweeps across the country, covering the eastern, southern, central, and southwestern sections of the nation. It emphasizes education at the trade level for air conditioning, refrigeration, and heating.

Controlorama offers an educational approach to the sale, application, installation, and service of automatic controls used on equipment for these industries, a spokesman said.

Largest single show attendance during the latest run was in Chicago where one performance drew 765 guests while another Windy City meeting was attended by 495, it was noted. In Minneapolis, 764 came to view Controlorama.

Controlorama features wide screen color film projection; intricate electrical operating panels which simulate many typical air conditioning, refrigeration, or heating systems and how they can be controlled.

So far in 1956
We've told your customers....
"BUY FROM YOUR WHOLESALER"

1,500,000* TIMES

...THIS IS REEL SUPPORT

Every time your customers read a Wolverine Tube advertisement or direct mail piece, the message "BUY FROM YOUR WHOLESALER" is pounded home. We make a point of saying this time and time again because of Wolverine Tube's belief in the wholesaler as an integral part of the distribution cycle.

*1,566,372 to be exact without counting its use on every Roll-O-Tube® carton.

Of course, each message tells your customer about the *reel* time and labor-saving advantages of Wolverine Roll-O-Tube. You too, can do him a real service by reminding him of these advantages when he's in your place of business. *Do it—today.*

Do You Have This Book?

We've distributed more than 10,000 copies of our "What's a Wholesaler" book this year! Send for your copy today.

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They'll Do It Every Time

by Jimmy Hatlo

I WAS PLUGGIN' FOR YOU ALL THE WAY, COSMO--
WE JUST HEARD YOU GOT THE PROMOTION--COULDN'T HAPPEN TO A NICER GUY--- IN FACT, I KEPT TELLING THE BIG BOSS THERE'S ONLY ONE MAN FOR THE JOB---COSMO COLESLAW---
THOSE GUYS ARE MORE TWO-FACED THAN A GAMBLER'S PET QUARTER---
FRONT-RUNNERS---THEY ALWAYS PICK THE WINNER AFTER THE PHOTO FINISH IS ANNOUNCED---
WELL, THANK YOU, PHOOTKISS--THANK YOU, VERMIN--
YEAH---VERMIN WANTED THAT JOB--HE SAID COSMO COULDN'T RUN A LEMONADE STAND---
THOSE GUYS WEREN'T IN A PHOTO FINISH--THEIR NOSES ARE NEVER ANYWHERES NEAR THE GRINDSTONE----
LISTENING TO THE SOUR-APPLE BACK-SLAPPERS LEAD THE CHEERING SECTION---
THANX AND A TIP OF THE HATLO HAT TO I.X.L. TEAM, SPOKANE, WASH.

Peace and Good Will

All over the world at Christmastide, decent men of goodwill—and their beloved women and children—stop fighting for temporal advantage, and turn their emotional drives toward human loving kindness.

So it is that this editorial is devoted not to exhortation or the business of being businesslike. Instead, we present the following winnowed words of wisdom:

The lovely legends of the day; the stories and the songs and half-fairy lore that gather around it; the ancient traditions of dusky woods and mystic rites; the magnificence or simplicity of Christian observance; the lighting of Christmas trees and hanging up of Christmas stockings, the profuse giving, the happy family meetings, the dinner, the game, the dance—they are all the natural signs and symbols, the flower and fruit, of Christmas.—G. W. CURTIS.

One of the great sins of modern age is that of giving supreme devotion to things which are not of supreme importance.—EARL RINEY.

The only way to get the best out of anything is to make the best of the good things you've got.—R. T. ALLEN.

Life pays us for being kind enough, good enough, efficient enough. But when we give more kindness, the recompense that comes to us is more than interest and compound interest.—*Good Business.*

Love is never wasted; it will come back to you some day.—DAGOBERT D. RUNES.

We must learn to push forward without elbowing others aside. The one who wins the truest success is never in such a hurry to reach his goal that he cannot hold out a helping hand to those whose steps are faltering.—MEGIDDO.

Some people may have their first dollar, but the man who is really rich is the one who still has his first friend.—*Grit.*

Every time we hold our tongues instead of returning the sharp retort, show patience with another's faults, show a little more love and kindness, we are helping to stockpile more of these peace-bringing qualities in the world instead of armaments for war.—CONSTANCE FOSTER.

If, after I depart this vale, you ever remember me and have thought to please my ghost, forgive some sinner and wink your eye at some homely girl.—H. L. MENCKEN.

Next to knowing when to seize an opportunity, the most important thing in life is to know when to forego an advantage.—BENJAMIN DISRAELI.

No man is the whole of himself; his friends are the rest of him.—HARRY EMERSON FOSDICK.

It's a pity that some folk never learn that uncovering the other fellow's faults will never cover up their own.—*Watchman-Examiner.*

Too often we live beyond our means to impress people who live beyond their means to impress us.—HERBERT V. PROCHNOW.

There are two things to aim at in life: first, to get what you want; and, after that, to enjoy it. Only the wisest of mankind achieve the second.—LOGAN PEARSALL SMITH.

Unhappiness lies in not knowing what we want and killing ourselves to get it.—*Alabama Baptist.*

The simple realization that there are other points of view is the beginning of wisdom. Understanding what they are is a great step. The final test is understanding why they are held.—C. M. CAMPBELL.

No task is as difficult as striving to become a civilized person; but the lasting happiness which comes with that attempt makes the effort seem small indeed as compared with the value to be gained.—LELAND P. STEWART.

We must not promise what we ought not, lest we be called upon to perform what we cannot.—ABRAHAM LINCOLN.

Let each day take care of itself and first thing you know you'll have 96 years of them to look back on—and most of them will look good.—GRANDMA MOSES.

It is completely unimportant. That is why it is so interesting.—AGATHA CHRISTIE.

Knowledge has to ripen into wisdom. It must be seasoned with good judgment and goodwill before it can be used with skill and assurance in contributing to human well-being and the progress of mankind.—EDWARD M. TUTTLE.

The best things in life aren't really free, because most of us have to spend a lifetime learning they're the best things.—*CMD Magazine.*

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AIR CONDITIONING & REFRIGERATION NEWS

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F. M. COCKRELL, *Founder*

'The Conscience of the Industry'

Published Every Monday by BUSINESS NEWS PUBLISHING CO., 450 W. Fort St., Detroit 26, Mich. Telephone Woodward 2-0924. Subscription Rates: U. S. and Possessions and Canada: $6.00 per year; 2 years, $9.00; 3 years, $12.00. All other countries: $10 per year. Single copy price, 40 cents. Ten or more copies, 30 cents; 50 or more copies, 20 cents each. Send remittance with order.

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VOLUME 79, NO. 17, SERIAL NO. 1,449, DECEMBER 24, 1956

SEES BIG EDUCATION JOB NEEDED FOR FHA, VA

American-Standard
Air Conditioning Div.
New York, N. Y.

Editor:

It is my understanding that a major bottleneck in selling year-round air conditioned houses is the fact that the FHA and the VA will not give any worthwhile increase in the evaluation of the property if air conditioning is included. This means that putting in air conditioning must almost necessarily mean a substantial increase in the down payment required for the house, regardless of the income of the buyer. As most people buy houses with the idea of getting the best possible house with the least possible money down, this throws an awful monkey wrench in the machinery of selling air conditioned houses.

It is apparent that builders realize the value of air conditioning because so many of them feature air conditioning as an optional feature, thereby acknowledging the sales power of the air conditioning story while at the same time avoiding completely the responsibility for putting air conditioning into their houses. I am sure that if the down payment did not have to be so much greater for an air conditioned house, many more builders would be willing to put in the air conditioning as original equipment.

It seems to me that a concerted effort is required on the part of everyone in the Air Conditioning Industry to preach the gospel that an air conditioned house is the only practical investment for the buyer and the banker, and it certainly is more profitable business for the builder. But, until the banker has been educated to the truth that his investment is much better protected in the air conditioned house, we are obviously going to have our troubles with the other two.

We intend during the coming year to do everything we can to get this story across to the mortgage lending fraternity and I would certainly appreciate any facts, figures, illustrations, etc., that you can supply me from your files that will help to support the case all the way with facts and figures as outlined in your editorial of the 19th.

We agree that this is a priority educational job for the Industry and appreciate your efforts in promoting it.

W. P. SHEEHAN, Manager,
Advertising & Sales Promotion

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Company.....
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City ..... Zone ..... State .....
IMPORTANT: Company's Type of Business.....

Now Representing...

Fedders-Quigan Corp. — Three new distributors have been named to carry the company's air conditioning line. They are Hart-Greer, Inc., Birmingham, Ala., replacing Moore-Handley Hardware Co., Inc. of Birmingham in Birmingham and Mobile (Moore-Handley continues in Chattanooga and Nashville, Tenn.); Joe L. Pleasants, Inc., Charlotte, N. C., replacing Appliance Service Corp., Charlotte; and Copeland & Co., Knoxville, Tenn., replacing Graybar Electric Co., Knoxville, in Knoxville and Bristol, Tenn.

Amana Refrigeration, Inc.—Ahrens Wholesale Appliance Co., Little Rock, has been named to handle the distribution of Amana products throughout most of Arkansas.

Bryant Mfg. Co.—Bryant of Wisconsin, Inc., headquartered in Milwaukee, has been appointed distributor for Wisconsin. Heading the new operation is Frank N. Seaver, whose previous experience includes 8½ years as sales manager of Reuter's Automatic Heating and 1½ years with Heating Equipment Co., both of Milwaukee.

Mitchell Mfg. Co., Div. of Cory Corp.—Harold Reiter Associates has been appointed sales representative in greater New York City and northern New Jersey. The firm will handle only the Mitchell central air conditioner line in its dealing with Mitchell distributors. This is a new position in the Mitchell distribution pattern.

Typhoon Heat Pump Co.—Tom Price of Houston and his associate, G. P. Coffee of Corpus Christi, Texas have been appointed factory district representatives for south Texas.

Kalamazoo Furnace & Appliance Mfg. Co.—Paul B. Stowell of Jackson, Mich. was named sales representative in Ohio and Indiana. He has been associated with the sale of warm air heating conditioners in the territory for some time.

Cahn Electric Co. (Shreveport, La.)—Announced its appointment as wholesale distributor for Worthington air conditioning equipment.

Norge Div., Borg-Warner Corp.—Nelson & Small, Inc., Portland, Me. has been appointed distributor of Norge gas and electric home appliances. A branch operation is located in Orono, Me. The firm's territory is comprised of all 16 counties in Maine and several counties in northeastern New Hampshire. Graybar Electric Co. (Los Angeles), Inc. has been named distributor of Norge gas and electric home appliances. It has a branch in San Bernardino, Calif. also.

Thoben Elrod Co. (Atlanta)—Announced it has been appointed by Norge Div., Borg-Warner Corp., as distributor for the full line of Norge home appliances.

Gibson Refrigerator Co.—Yonts Radio & Appliance Co., Inc., Dayton, has been named Gibson full-line distributor in the Dayton area. Home Appliance Distributors, San Antonio, Texas, has been appointed window air conditioner distributor for the San Antonio trading area. Soffin & Wimple Co., Bangor, Me., has been appointed a Gibson distributor in the Portland Bangor trading areas.

Embassy Steel Products, Inc.—Young-Jones Co., Cambridge, Mass., has been appointed sales representative in Maine, Vermont, New Hampshire, Rhode Island, Connecticut, and Massachusetts for this manufacturer of heat transfer products.

Kelvinator Div., American Motors Corp.—Taylor Distributing Co., Spokane, Wash., has been named distributor of Kelvinator and Leonard products in eastern Washington, and counties in Idaho and Montana. The territory was formerly serviced by Kelvinator's zone office in Seattle, which will continue to operate in western Washington and Oregon.

Mann Refrigeration Co. (New York City)—Reported its appointment as exclusive distributor for C. Nelson Mfg. Co.'s complete line in New York state and eastern New Jersey.

McCombs Supply Co. (Denver) was appointed manufacturer's representative for Jamison Cold Storage Door Co. in the Rocky Mountain area.

Graybar Electric Co. (New York City) has added Emerson Electric Mfg. Co. room air conditioners to its line in nine branches in New York, New Jersey, and Connecticut.

Mitchell Mfg. Co.—Raub Supply Co. (Lancaster, Pa.) has been named room air conditioner distributor for Mitchell in the Lancaster-Harrisburg area. The firm replaces Big Boys Distributing Corp. in Sunbury, Pa., and Medill Corp. in York.

WHAT . . WHEN . . WHERE

— A Guide to Coming Events of Interest

National Wholesale Frozen Food Distributors Association (NWFFDA) Convention and Exposition
Jan. 6-10, Fontainbleau hotel, Miami Beach

Home Furnishings Market
Jan. 7-20, Merchandise Mart and American Furniture Mart, Chicago

National Association of Home Builders (NAHB) Convention and Exposition
Jan. 20-24, Chicago

American Society of Heating & Air Conditioning Engineers, Inc. (ASH&AE) Annual Meeting
Feb. 25-March 1, Chicago

International Heating & Air Conditioning Exposition
Feb. 25-March 1, International Amphitheater, Chicago

Cody Ice Box Law

CODY, Wyo.—City Council here recently enacted an ordinance prohibiting the abandoning of ice boxes and refrigerator where accessible to children. Violators are subject to a $100 fine and 30 days in jail.

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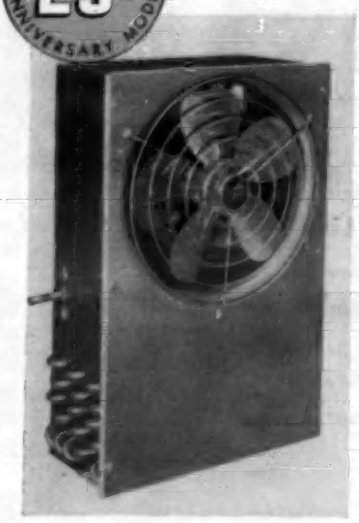

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'No Noise' Electric Air Valve Developed

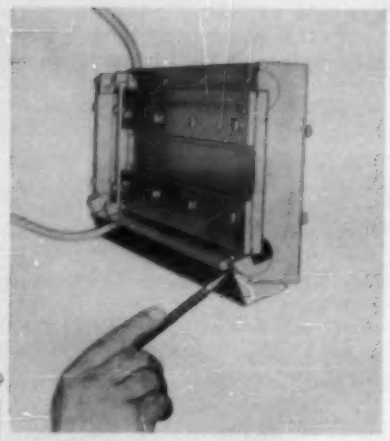
——KEY NO. F-1240——

SKOKIE, Ill.—An electrically-operated air valve that doesn't talk, hum, or chatter was announced recently by the Powers Regulator Co., manufacturer of automatic controls.

Closely-held spring, armature, guide, and material tolerances prevent alternating current hum and other noise usually present in such controls.

The electro-pneumatic valve is recommended for noiseless control of air conditioning damper motors, as well as for control of pneumatic motors and valves on industrial equipment.

When electrically energized, the valve will pass full air at supply pressures up to 25 lbs. When not energized, the valve will waste air from its outlet port.



Unit Bends Inside Corner to 24-In.

——KEY NO. F-1241——

MINNEAPOLIS — Inside corner bends up to 24 in. can be made quickly and easily with the recently offered larger cheek-bender of Bett-Marr Mfg. Co., according to the manufacturer.

The unit has a two-way trunion at the open end which is said to assure evenly perfect bends on inside corners. It also holds the bending bar in position to make certain the sheet is flat before the bend is made.

Big brother to the 12-in. cheek-bender, the new unit also has an adjustable plate which can be set for bends of any width from ¼ to ⅞ in. Handwork is eliminated on a variety of sheet metal jobs, the firm stated. The unit accommodates 24-gauge sheets and spacers are available for 22 and 20-gauge sheets.

Two lag bolts attach the 77-lb. cheek-bender to the workbench, it was explained.

7 Time Switches Added to Line

——KEY NO. F-1242——

CHICAGO—International Register Co. here, recently announced the addition of seven new time switches to its "Intermatic" line.

The new models offer more accuracy and versatility in control of electrical circuits from periods of 2 seconds to 24 hours, the company said.

Among these new models are the T960 series, for 1 to 96 on-off operations every day and suited for control of pumps, fans, recorded music, process timings, etc., and the V21000 series, a seven-day time switch, used for controlling heating and air conditioning systems, lights, fans, etc. on a weekly schedule to permit different timing periods daily, if desired.

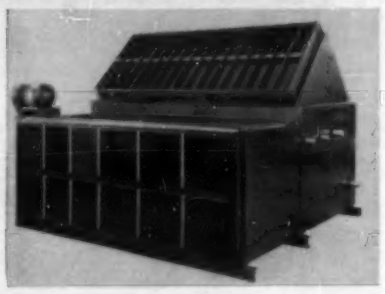
Another series, the V22000, is a two-circuit switch that finds wide use in apartment houses, stores, factories, and public buildings. A time switch for controlling operations of 5 or 15-minute intervals during a 24-hour period is the V27000 series.

Program timers are also included among the new models. The V28000 or V29000 series control 1 to 288 daily operations of bells, buzzers, and signal lights for periods of 2 to 60 seconds. Also included, is the C8300 series, a 12-minute cycle repeater timer that can be used on fans, poultry foggers, and similar operations, the company added.

Central Unit Heats, Cools Simultaneously

——KEY NO. F-1243——

MINNEAPOLIS — A new central-station type air conditioning unit designed for buildings where both heating and cooling are required simultaneously was recently announced by McQuay, Inc.



"Multi-Zone Unit" "MC" delivers to each zone either filtered, cooled, and dehumidified air or filtered, heated, humidified air, the firm states. Available in eight sizes ranging from 1,370 to 21,000 c.f.m., each size has a maximum number of zones varying from six on the smallest to 22 on the largest.

Each zone consists of one hot air damper and one cold air damper mounted on a common shaft so when either damper is fully closed the other is fully open. By automatic control of the zone dampers air is supplied to each zone at required temperature.

Double-tube steam coils are furnished as standard equipment for minimum variations in leaving air temperatures across the coil face. Face velocity through the heating coils is about 900 f.p.m. when cooling face velocity is 500 f.p.m. All steam coils are pitched toward the return connections for proper condensate drainage.

All MC units are offered in either horizontal or vertical models. Two types of discharge sections are available, horizontal and angular. The latter is designed for vertical air discharge or a combination of vertical and horizontal air discharge, the company said.

Jackes-Evans Makes Multi-Voltage Coil Available

——KEY NO. F-1244——

ST. LOUIS—Jackes-Evans Mfg. Co. here announces a new multi-voltage coil, now available for use in the complete J-E line of solenoid valves.

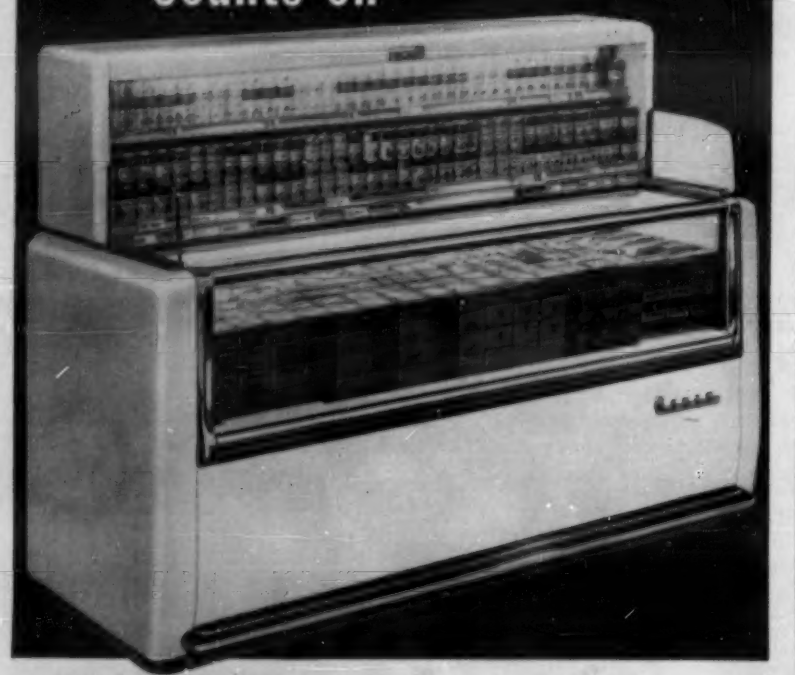
Flow control of 12 common fluids, water, air, light oils, "Freon-12" and "22" (liquid, hot gas, suction), brine, industrial gas, 5 lbs. steam, etc., through 42 different valve styles and capacities, and with any one of seven electrical circuits (115/25, 115/50 and 60, 208/50 and 60, 230/50 and 60), is now obtainable through the use of this new J-E multi-use coil, the company said.

Valves range from 7/64 in. to 1½ in. port sizes, are suitable for temperatures up to 225° F.

"A unique data plate that shows the correct hook-up for each electrical requirement is supplied with each valve," it was pointed out. "Lead wires, with General Electric 'Geoprene' insulation, are clearly color-coded for easy identification," it was stated.

Temperature rise is said to be extremely low—less than one half of the allowable limit.

WEBER BLIZZARD 161
Ice Cream Cabinet...
Counts on

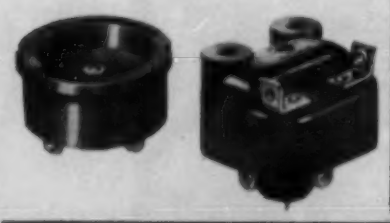


KLIXON Automatic Defrost Thermostat Controls for trouble-free performance

Dependable, day in-day out, trouble-free cabinet service is a must with the Weber Showcase & Fixture Co., Inc., manufacturers of the Weber Blizzard 161 Automatic Defrost Ice Cream Cabinet.

And, to help assure this kind of performance to customers, Weber specifies and uses KLIXON hermetically sealed, fixed temperature controls. As Karl Weber, President of Weber, says: *"KLIXON Thermostats have helped make the Weber Blizzard 161 truly the 'jewel of the industry.'"*

You, too, can build and maintain a high reputation for your freezer cabinets, beverage coolers, air conditioners and refrigerated units by using KLIXON Controls. Write today for Bulletins THSN-4 and THSN-9A on hermetically sealed thermostats.



KLIXON Motor Protectors and Starting Relays help refrigeration compressors deliver maximum safe output under adverse operating conditions. Send for "The Story of the Spencer Disc."

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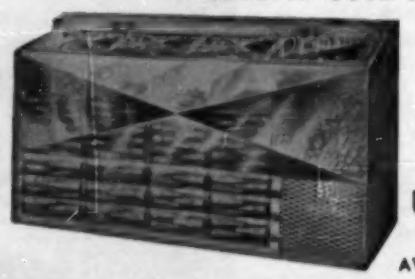

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Products Advertised
(list name, page, and issue date)

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For more information about products advertised on this page use Information Center, page 16.

Design Self-Contained Unit for Fountains

——KEY NO. F-1246——

CHICAGO — A new self-contained refrigerator with stainless steel front, sides, top, and lining, designed for use with fountain-food units, was recently introduced here by Bastian-Blessing Co.

Available in three models, the refrigerator defrosts automatically, can be set next to a griddle. All models have 10-cu. ft. capacity.

The first is a single high temperature unit which maintains 40° to 45° in both upper and lower compartments, the company said. The lower portion has self-closing drawers or doors. Second, with doors only, is a single low temperature, 15° to 20°. Third is a dual temperature with low temperature in the upper compartment and high temperature in the lower compartment.

H & M Offers Small Pipe Beveling Machine

——KEY NO. F-1247——

TULSA, Okla.—Introduction of a portable flame cutting and pipe beveling machine for small diameter 1½ to 4-in. pipe was recently announced by H & M Pipe Beveling Machine Co. here.

Model "O" weighs 7½ lbs., uses

the same split-gear horseshoes principle which characterizes the firm's larger units, and allows the operator to place the machine on continuous pieces of pipe, the firm said.

A specially-designed boomer strap speeds up the process of changing the machine from one piece of pipe to another, it was explained.

Silicate Coating Said To Dry Quickly

——KEY NO. F-1248——

WAUKEGAN, Ill.—Allied Porcenell, Inc. here recently began marketing "Profilm," a silicate modified coating which has the appearance of paint, can be applied with conventional spray equipment, yet is said to dry to the touch on most applications in a few minutes.

Designed for use where corrosive elements are sources of coating failure, Profilm was developed by a research company owned jointly by Poor & Co. and Youngstown Sheet & Tube Co. It can be applied to virtually any coatable surface, the manufacturers stated. It is available in black, clear, metallics, and colors.

A uniform, continuous, low porosity film, Profilm is claimed to provide resistance to a wide variety of chemical environments. Other characteristics of the new product, it was added, are that cement will not adhere to it.

Rigid Foamed Plastic Board Insulates Trucks

——KEY NO. F-1249——

LANCASTER, Pa. — A rigid, foamed plastic insulation board that combines light weight and moderate cost with relatively high compressive strength and high insulating efficiency has been developed by the Armstrong Cork Co., it was announced.

In refrigerated truck and trailer bodies, and in refrigeration equipment, the new material, "Armalite," is designed to cut gross weight with an increase in insulating effectiveness.

The material has more than sufficient strength for use under concrete wearing floors, as free-standing walls in cold rooms, and in walls and floors of truck and trailer bodies, the firm pointed out.

Armalite may be used at temperatures from -50° F. to 160° F. It has a k factor of 0.24 at 60° F. mean temperature, and an average modulus of rupture of 24 p.s.i.

It is applied by the cold erection method, using an adhesive, with additional support supplied in cold rooms by hardwood skewers or galvanized nails. Multiple layer construction is recommended by the manufacturer.

The new insulation is structurally stable and odorless, and is available in boards 2, 3, and 4 in. thick in 12 in. by 36 in. size for cold rooms, and in 36 in. by 36 in. size for insulating refrigerated equipment, truck and trailer bodies, it was added.

"Trouble-free performance of rugged Typhoon parts chalks up satisfied customers for me," says Sid Taylor (left), Typhoon's Des Moines dealer.

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Selecting circuits and manifolding when connecting several air conditioning and refrigeration units to a single remote air-cooled condenser can be expensive unless the air-cooled condenser is designed for the simplicity that means low labor costs.

That's why it's real news that Halstead & Mitchell engineers have devised a remote air-cooled condenser especially for extra-easy multi-circuiting. As costs come down, your sales go up.

The Halstead & Mitchell Air-Cooled Condenser has been designed with several *no-cost* extras like this easier multiple circuiting. Only Halstead & Mitchell offers, for instance, "Turbu-Flo"® finned surface which provides added heat transfer to give you *extra-safe* capacity ratings. No need to worry when *you* recommend H & M.

There are extra years of working life, too, for Halstead & Mitchell's superiority in cooling tower steel protection has been used to keep air-cooled condensers free from rusting. The tubing assembly is self-reinforcing, locking out vibration before it starts.

Lifetime ball bearings and deep-pitch, slow-speed fans make for quiet operation. It's the assured operation you look for when you select Halstead & Mitchell, manufacturer of the industry's broadest line of water-saving devices for air conditioning and refrigeration.

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Electrical Characteristics of Packaged Air Conditioning Units (3)

Air Conditioner Step Starters, Starting Frequencies Discussed

By P. W. Wyckoff, Chief Engineer, Airtemp Div., Chrysler Corp., Dayton

The discussion by P. W. Wyckoff which has been published in three successive issues of the NEWS, was presented before a meeting of the Transmission and Distribution Committee of the Edison Electric Institute.

The discussion is much more than an outline of the "electrical side" of air conditioning units in its relationship to electric power facilities. Rather it is the most comprehensive—and thoroughly up-to-date discussion of the electrical characteristics of unitary air conditioners that has come to our attention. It has much that should be of prime interest to manufacturers and contractors.

This final instalment concludes the results of studies on air conditioner starting and running current, with performance curves, a discussion for step starters, and recommendations for both manufacturers and utility companies.

STEP STARTERS

Utility starting current rules for air conditioners usually permit an alternate to having the approved starting current. The alternate is usually a step starter which limits the current on the first step to the specified value (although not on the second step), which stays on the first step at least one-half second, and which at no time interrupts the circuit.

Fig. 17 shows the wiring diagram for a typical resistance step starter. The voltage applied to the compressor motor is through the resistor on this single-phase unit until the timing period is over at which time the contacts by-pass the resistor and the motor operates normally.

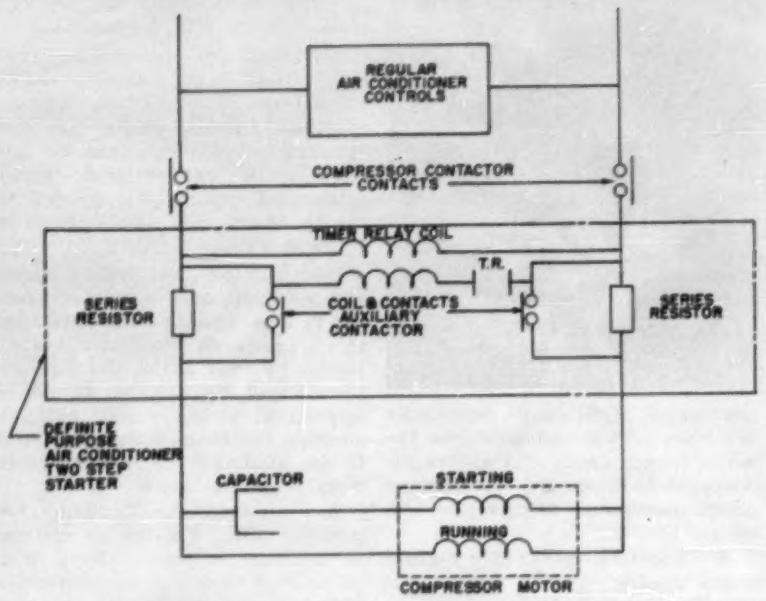

FIG. 17—Wiring diagram for typical resistance step starter.

Such a starter was applied to a 4.2-ton air-cooled residential air conditioner and the starting current measured with a Brush oscillograph. The envelope of the current is shown on Fig. 18.

Many engineers in our industry have a question as to whether these step starters actually reduce flicker problems. For example, if this curve is regarded as two 73 ampere bumps on the line instead of a single 108 ampere bump, the General Electric flicker curves developed in 1934 would indicate that neither operation would be below the borderline of irritation unless the equivalent length of No. 2 secondary is under 300 ft.

The reports that we get from our sales organizations indicate that these step starters frequently appear to make the flicker situation worse instead of better because of the long period on the first step.

Generally speaking, an air-cooled air conditioner with 108-ampere locked rotor current will not start when the starting current is reduced to 73 amperes by means of a step starter—at least during the summer season.

It would be our suggestion that the utilities thoroughly review the General Electric flicker data and bring it up to date—considering especially the flicker effect of step starters. We had hoped to run some tests with several of the local utilities this summer.

We were looking for instances of flicker complaints due to air conditioning where we could add a step starter and observe the effect of it. Since this program was started rather late in the season, the only instances obtained would not have been helped appreciably by the step starter.

The use of step starters in the field has shown us that they cannot be properly policed. I observed on one occasion a step starter which had been bypassed by an individual serviceman, apparently due to some difficulty. This was not known either to the dealer he worked for, the customer in his house, or the utility. From our experience, this situation will simply mean that eventually most of the step starters will be put out of use by servicemen.

There is a serious cost situation on the single-phase step starters. It is not unusual for various air-cooled residential air conditioners to be installed at customer prices in the range $900 to $1,400 over and above the cost of the heating system. A standard starter, as supplied by several of the major control people and approved by Underwriters' Laboratories for safe operation, will commonly cost the customer from $150 to $200. Approval of the Underwriters' Laboratories is vital if safety is to be protected.

In the case of air conditioners, for example, no major manufacturer produces a unit without Underwriters' approval since its standards are so widely recognized by local authorities it would be impossible to sell equipment without it.

Even in the case of Underwriters' approved starters, however, Underwriters' Laboratories do not sanction installation of these units in the field on Underwriters' approved air conditioners since the internal wiring of the unit must be disturbed to add them.

This would mean that for complete approval, each manufacturer would be forced to add the starter to every air conditioner. According to quotations received from starter manufacturers, a major increase in volume would not decrease the price appreciably.

Recently there have been available on the market so-called definite purpose starters specifically for air conditioners. These are considerably lower in cost and would sell to a customer for possibly $100 to $120.

However, they are not Underwriters' approved and they have the disadvantage that if for any reason the step starter timer

(Continued on next page)

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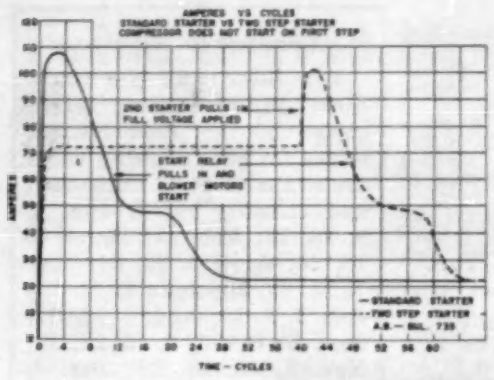
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COMPRESSOR DOES NOT START ON FIRST STEP
2ND STARTER PULLS IN FULL VOLTAGE APPLIED
START RELAY PULLS IN AND BLOWER MOTORS START
AMPERES
TIME - CYCLES
—STANDARD STARTER
--TWO STEP STARTER
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FIG. 18—Envelope of current.

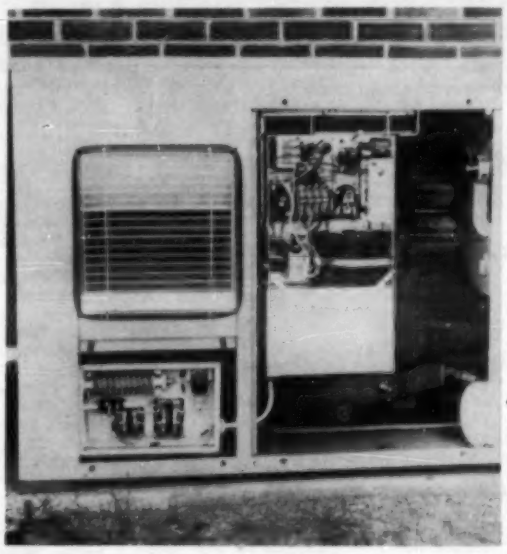


FIG. 19—Home-made starter applied to 4.2-ton residential installation.

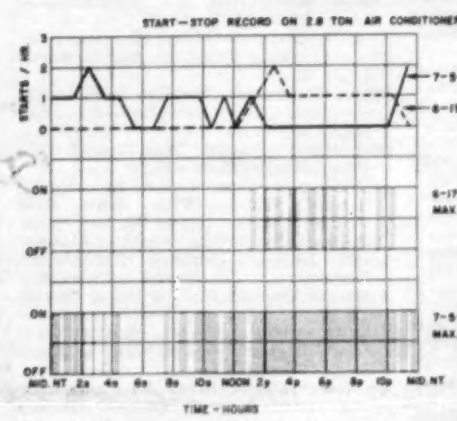


FIG. 20—Starting periods for a typical residential air conditioner in an actual installation.

Current--

(Continued from preceding page)

should stick, the resistor is left across the line for an indefinite period until it burns out. The experience has been that there must be some additions to these units to eliminate fire hazard or compressor failures in the event of failure of the timing mechanism.

Actually we have found that air conditioning installers feel that even the definite purpose starters are too expensive and put both the utility and the dealer in an uncomfortable position with the customer. Therefore, many of them have built up their own step starters in the hope of reducing cost.

Some of these units have been well made and have included safety devices, but because the individual dealer usually does not have sufficient equipment, we have found that frequently the time delay period is far less than one-half second or in some other respect the starter is not satisfactory.

Fig. 19 shows one of these home-made starters applied to a 4.2-ton residential installation. They are being sold at retail for around $75 installed. Since many of our installation troubles are now electrical problems, we are afraid this will make the trouble worse.

From considerable experience, we think it is a great mistake to contemplate the use of step starters in any quantities in residential air conditioners and commercial package air conditioners.

STARTING FREQUENCY

We are frequently asked by the utility what frequency of starting may be expected on residential and commercial air conditioners operating normally on the thermostat. Fig. 20 shows starting periods for a typical residential air conditioner in an actual installation.

The lower the outside temperature—as during the spring and fall—the more frequent is that starting and stopping. The shaded areas in Fig. 20 indicate the periods during which the unit was operating, for temperature of 84° F. outside maximum and 91° F. It will be noted that in this particular case the maximum number of starts per hour was two.

In our experience, four starts per hour is a reasonable maximum and none of our manufacturers contemplate permitting ing increases substantially over the figure.

SUMMARY

To summarize this information, we have the following definite recommendations:

For the Air Conditioner Manufacturer

1. Manufacturers should do everything possible to encourage their local sales organizations to inform the utility of every air conditioning installation before it is made. They should develop adequate service organizations to keep the equipment in good operating condition.

2. The complete electrical characteristics of the various conditioners on the market should be made available to utilities. Our trade association, the Air-Conditioning & Refrigeration Institute, is actively working on this project with the Edison Electric Institute and this information should be available in the near future.

3. Since the starting current of a typical ⅓-hp., 230-volt, single-phase blower motor is roughly 20 amperes and there are two of these motors used in a typical residential system, it is possible to save 40 amperes on the starting inrush by arranging for this motors to start in sequence.

We feel manufacturers should immediately investigate the possibility of making this arrangement in their units—particularly where control of the design is in the hands of the manufacturer rather than the installer. It will probably take a year to make these changes effective.

4. Equipment should be designed for frequencies of start not exceeding four per hour.

For the Utility

1. We recommend that in developing starting current rules, a reasonable curve be set up on the basis of a relationship between ASRE current and locked rotor current as shown in Fig. 13. Values should obviously be chosen so that nearly all the major manufacturers are able to meet them but so that they rule out unreasonably high locked current units.

There should be no wishful thinking that there will be radically reduced starting currents. By the very nature of the refrigeration cycle, this seems almost out of the question.

2. We feel that step starters are very undesirable devices for the utilities, the manufacturers, and the customers. In many cases they are unsafe, they do not appear to really help the flicker problem, they are too easily put out of operation and they are too costly to expect a customer to accept considering the small amount of good they are claimed to do.

3. We recommend that the utilities review the flicker data in use the past 20 years and bring it up to date.

(To Be Reprinted)

Carrier Outlet In New Orleans Moves

NEW ORLEANS — Corkern Refrigeration Service, Carrier Corp. outlet, recently moved to 3300 Magazine St. here, Bob Corkern, head of the firm, announced.

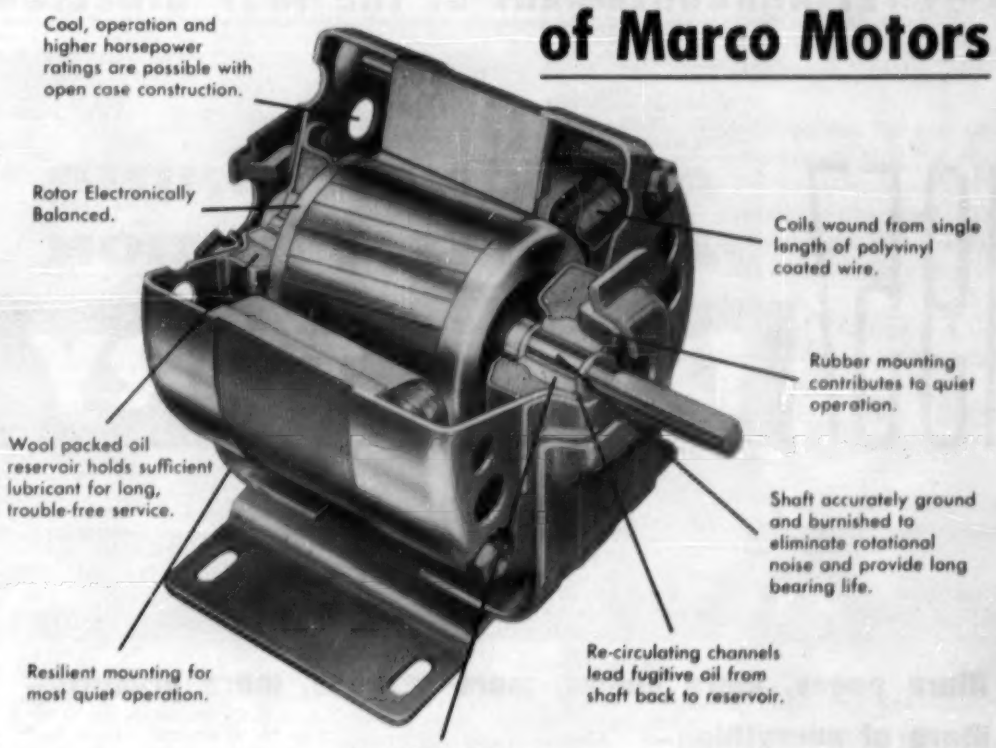
Corkern reminded all his customers that "if you wish to get top efficiency from your Carrier air conditioner all summer, this is the time of the year to give it special attention."

Calling Corkern's number "will bring a truck to pick up your air conditioning unit for storage until hot weather."

This is only part of the

INSIDE STORY

of Marco Motors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Guide to Stories Which Ran In the NEWS In 1956

Editor's Note: Following is a listing of some of the stories and articles which appeared in the NEWS during 1956. This is by no means a complete summary of all articles, but rather some of the more significant stories. They are noted by the headline under which they appeared and are classified by general subject matter.

Copies of some of the issues are still available at 40 cents for a single copy; ten or more copies, 30 cents each; 50 or more copies, 20 cents each. Please see the accompanying box for a listing of available issues.

Air Conditioning

GENERAL

Sizing Ducts—3 Factors Include Plenum Pressure, Air Quantity, Total Effective Duct Length, Waalkes Advises. Jan. 9, p. 14.

Where Does Contractor Fit In '56 Picture? Jan 23, p. 26.

Delicately Balanced Laboratory Air Conditioning System Gives Control to 1/20th of a Degree. Feb. 13, p. 30.

A New 'Look' at Noise—Recent Studies Indicate That Noise Produced by Air Conditioners Can Be More Accurately Measured. Feb. 20, p. 7.

Impartial Surveys Show—Chains Consider Conditioning a Merchandising Necessity, Retail Stores, Motels Offer Most Promising Sales Field. March 12, p. 16.

'Desk' Workers Hardest Hit by Heat—Heat Stress Draws Blood to Skin, Ups Sweat Production; Study To Develop Index of Heat Effect on Work Indicates. March 12, p. 30.

Benefits Reported by Air Conditioning Owners. March 12, p. 44.

Direct Testimony—About How Air Conditioning Has Improved the Health and Happiness of Those Who Have It. March 12, p. 44.

'Short, Short' Course In Air Conditioning Fundamentals—(1) Frigidaire's D. C. Schaffer Condenses Basic Knowledge Into Brief Summary. March 12, p. 56.

Will Duct System Balanced for Cooling Offer Correct Heating Temp. Balance? March 12, p. 62.

Tips To Avoid Home Conditioning Pitfalls: Follow Instructions, Codes; Locate, Isolate Equipment; Size Lines; Check Refrigerant, Wiring; Balance Ducts. March 12, p. 70.

What's the Market for Systems 100 Tons and Up? March 12, p. 74.

Air Conditioning Improves Animals—Tests Show Hogs Fatten Quicker, Chickens Lay Better, Cattle Produce More Milk at 60-65°. March 19, p. 11.

'Short, Short' Course In Air Conditioning Fundamentals—(2) Air Flow Factors Are Essential to Proper Design of Successful Duct Systems. March 19, p. 12.

'Short, Short' Course In Air Conditioning—(3) Describes Grilles, Outlets, Dampers, and Tools for Checking Distribution. March 26, p. 14.

Free Home Trials Suggested As Method of Tapping Profitable Dehumidifier Market. April 2, p. 8.

'Short, Short' Course In Air Conditioning—(4) Various Types of Ventilation, Filtration Discussed by Schaffer of Frigidaire. April 2, p. 26.

Houston Club Conditions Air Two Times To Assure Patrons the Finest To Breathe. April 9, p. 6.

Heating, Air Conditioning Dealers Go To School—Experts Show How To Finance, Operate Business Profitably; Explain Insurance, FHA Loans, Human Relations, Opportunities. April 16, p. 5.

Humans Can't Adjust To Great Temperature Changes—Tests Show Physiological Effects of High Temperature Include Possible Heart Injury, Fatigue, Abdominal Distress, Fainting, Poor Judgment. April 23, p. 6.

Is Your Accounting Working for You?—It Should Be an Historical Record, A Guide To The Future, and a Managerial Check on Current Fulfillment of Objectives. April 30, p. 14.

Simplifying Air Conditioning Duct Design, Sizing—Draw Single-Line Layout, Locate Outlets, Assign Velocities, Size by Calculator on Guide, Figure Friction, Pressure Drop, Fan Motor Size. May 7, p. 11.

Gas Air Conditioning—It's Just Getting Ready To Claim Larger Share of Market, Says Utility Man In Summarizing Advantages of Gas System. June 18, p. 21.

Air Conditioning Conference Spotlights the Air-Cooled Condenser. July 2, p. 6.

Air Blender 'Supervisory Data Center' Can Provide 'Automation' on Large Cooling Jobs. Aug. 13, p. 8.

Big Buildings Turn To Cooling. Aug. 13, p. 1.

'Vast' Gains Seen for Air Conditioning; Expect Science To Prove Benefits. Sept. 3, p. 6.

See More Cooling Use at U. S. Bases Under New Ruling. Sept. 10, p. 1.

Fort Worth Group Offers Detailed Estimate Sheet To Keep Bids In Line. Oct 22, p. 1.

Du Pont Survey Shows Market for 270,000 Home Units—Active Consideration In Metropolitan Areas. Oct. 29, p. 1.

UA and Sheet Metal Workers Agree on Work Jurisdiction. Nov. 19, p. 1.

Aggressive Promotion Builds Dealership—Air Conditioner, Furnace, Boiler Offer Live Demonstration In Attractive Showroom; Attention-Getting Devices Added. Nov. 6, p. 6.

Expert Explains Relation of Fixed, Variable Costs to Break Even Point. Nov. 26, p. 14.

Compressor Shipments Up 37% In 8 Mos. ARI Says 3,511,418 Units Shipped Tops '55 Period; 336,737 Moved In August. Dec. 3, p. 1.

Air Conditioning Aids Heart Patients—Tests Show Heat, Humidity Ups Heart Action, Muscle Tension, Output per Beat; Patients Rest Better In Cool Atmosphere. Dec. 3, p. 6.

Refrigeration System Provides 'Absolute' Control over Cupola Blast Air Moisture Content at 40°. Dec. 3, p. 25.

Wampler Sees Cooling Sales at Peak $3 Billion In 1956. Dec. 17, p. 1.

Precision Gauge, Instrument Mgr. Air Conditions Plant To Provide Stability of Temperature and Humidity. Dec. 17, p. 15.

COMMERCIAL

Government Will Air Condition Most of Its New Buildings. Jan. 9, p. 1.

Market Air Conditioning—Right Equipment, Air Conditioning Study, Layouts, Promotion All Lead To Greater Sales and Profits for Packaged Dealers. Jan. 16, p. 6.

Recommended Air Conditioning Standards for New Government Buildings. Jan. 16, p. 32.

'Building Block' Cooling Unit Designed for 'Glass Walls'—Easy To Install, It's Said To Reduce Costs In Older Buildings. Jan. 23, p. 18.

Flexible Interior, Exterior Zone System Conditions Building Year-Round. Feb. 6, p. 16.

Drugstore Air Conditioning—It Boosts Traffic; Lengthens Shelf Life of Drugs, Candies, Rubber Goods. March 12, p. 20.

Motorized Damper Combined with Direct-Expansion Coil In 7½-Ton Remote Air Conditioner Solves TV Station's Transmitter Console Cooling Problem. March 12, p. 23.

30 Packaged Air Conditioners Satisfactorily Cool 9-Story Bldg. March 12, p. 38.

Church Saves $2,000 a Year In Electricity Costs Using 10-Hp. Compressor with Flexible Ice Storage Conditioning System. March 12, p. 39.

40-Ton Roof Unit Adapted for Exposure solves Air Conditioning Problem. March 12, p. 42.

7 Year-Round Packaged Units Condition Large Printing Plant Without Ductwork. March 12, p. 43.

How Water Savers Solved Water Shortage Problem In Tecumseh. March 12, p. 52.

Advertising Stunts Up Firm's Home, Commercial Air Conditioning Sales. March 12, p. 83.

High Velocity Air Distribution—Decision To Use It Must Be Based on Design Conditions; Contractor Offers Some Practical Design Suggestions. April 9, p. 30.

High Velocity Air Distribution—Need Seen for Minimum Satisfactory Design Criteria; Tips Given on Testing Single or Double-Duct Systems. April 16, p. 22.

Tool and Die Firm Cools Plant Just for Employes—Overhead Cranes Rule out Central System; Canvas Protects Packaged Units When Idle. April 16, p. 24.

'Stuffiness' Caused by Odors, Impure Air, Not Oxygen Lack; Remove These To Use Inside Air, Air Conditioning Group Told. April 30, p. 28.

System Cools Stored Trees, Warms Workers—Nursery 'Heat Pump' Chiefly for Winter, Fall Use. May 7, p. 35.

Engineer Advises Contractors on Design, Installation of High Velocity Duct Systems. May 21, p. 21.

Hot Gas Reheat Arrangement Saves Bank Several Thousand Dollars Each Year. May 28, p. 10.

Greater Control, Use of Outdoor Air Seen as Way To Better, Less Costly Air Conditioning. June 11, p. 14.

Packaged Units Chosen for Converting Warehouse To Office Building. July 9, p. 10.

How the Cincinnati Redlegs' Dugouts and Press Box Were Cooled—36-Ft. Cold Air Curtain Encloses Both Dugouts To Shield Out Hot Air. Aug. 13, p. 10.

Fidelity Bonds Can Protect Your Business—Individual, Schedule Form, Position Schedule, Primary Commercial, Blanket Position, Bonds Prevent Fidelity Loss from Wrecking Firm. Aug. 27, p. 17.

How G-E Went About Curing Birth Pains of 'Automated' Package Conditioner Plant. Oct. 1, p. 10.

83 Packaged Units Air Condition 210,000-Sq. Ft., 7-Story Clothing Factory—Suspended Units Permit Operational Flexibility Under Altered Heat Loads. Oct. 29, p. 6.

Specialty: Air Conditioning for Printing Plants—Firm Installs Packaged Units In 8 Nashville Shops In Short Period. Dec. 10, p. 20.

RESIDENTIAL

What's Ahead for Home Air Conditioning 1956-1965—Mfrs. Views Recorded on Problems, Mergers, Trends for Next Decade. Jan. 9, p. 10.

Water Shortage Cited as Aiding Trend to Air-Cooled Residential Air Conditioning. Jan. 16, p. 26.

What Happened In Residential Air Conditioning In Minneapolis In '55. Feb. 6, p. 10.

How Ceiling Diffusers Can Be Used In Residential Systems—Step-by-Step Instructions for Installation. Feb. 13, p. 14.

Studies at Research Residence No. 2 Provide Cost Data on Various Home Cooling Systems. Feb. 20, p. 23.

Novel Contest 'Gimmicks' Help Distributor To Acquaint Home Builders with Residential Air Conditioning Line. Feb. 27, p. 16.

How Residential Cooling-Heating System Controls Function—No. 1. March 5, p. 22.

What Happened To Residential Air Condition In Memphis In '55? March 12, p. 10.

$103 Cost Seen In Year-Round Test Plan. March 12, p. 22.

Installing a Year-Round Air Conditioning System—With Some New Twists. March 12, p. 26.

Selling Residential Systems—Louisville Dealer's Complete Records on Customers, Continuing Promotion Efforts Pay Off In New Sales. March 12, p. 58.

How Residential Cooling-Heating System Controls Function—No. 2. March 12 p. 60.

Chilled Water Central Air Conditioning Installed for $1,000-1,400 Utilizes Wet Heat System, Needs No Ducts. March 12, p. 82.

Advertising Stunts Up Firm's Home, Commercial Air Conditioning Sales. March 12, p. 83.

How Residential Cooling-Heating System Controls Function—No. 3. March 19, p. 21.

Designer Urges Lighter Decor—Air Conditioning Reduces Sweat, Grime 'Maintains' Delicate Fabrics In Home. April 2, p. 9.

What Happened To Residential Air Conditioning In Fort Worth In '55? April 2, p. 30.

Air Distribution In Home Systems—Lack of Sufficient Air Quantity Across Coil and Proper Supply Outlet Are of Prime Importance. April 2, p. 32.

Answers to Questions Asked By Men Who Are Installing Residential Air Conditioning. April 16, p. 16.

How To Calculate Heat Transfer Through Wall That Has Solar Radiation Load on Outside. April 23, p. 21.

What Happened To Residential Air Conditioning In Atlanta In 1955? April 30, p. 24.

Year-Round 'Wet' Packaged System of Minimum Ducts, Controls Air Conditioning—158 Apartments for Under $800 per Unit. April 30, p. 10.

Kentucky Contractor Recommends Attic Fan with Home Air Conditioning. May 21, p. 34.

NAHB Final Report Furnishes New Data on Austin Village. June 11, p. 1.

Final NAHB Report Furnishes New Data on Austin Village. June 18, p. 26.

Figuring Residential Jobs—'Box' the House; Under Size Border Line Calculations To Control Humidity Movement of Air; Provide Outside Air Duct; Plan Heat Load With People Set In Active Areas. July 30, p. 10.

Humidity Control In Home Cooling—Utility Executive Who Lives In Air Conditioned Home Describes the Problems and Urges Obvious Solutions. Aug. 6, p. 20.

Experts Eye Home Air Conditioning—See Short Cycles Under Partial Load Giving Better Comfort, Fuel or Electric Systems Dominant, Slow Market Saturation Rise, Quieter Units. Aug. 6 p. 14.

Home Builders Claim FHA, VA Obstruct Home Cooling Growth—'Official' Advisory Group To Give FHA Data. Aug. 6, p. 1.

How To Convince Home Buyers Air Conditioning Adds More Value Than Cost of Equipment. Aug. 13, p. 6.

All-Year Operating Cost of 'Comfort Engineered' Test Homes $11.66 Per Month. Aug. 20, p. 1.

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Guide to 1956 NEWS Stories--

(Continued from preceding page)

Many Home Buyers Unaware of Air Conditioning Advantages — Builders Say Problems of Selling Central System Include Price, Getting Adequate VA-FHA Valuation, Qualifying Buyers for Loans. Aug. 27, p. 6.

Builder Called 'Prime Medium' In Home Conditioning Sales—Special Advertising In Newspapers, Classes for Realty Agencies, Salesmen at Home Opening Project, Needed Factor In New Construction Sales. Sept. 10, p. 14.

How 18 Officers' Quarters Were Air Conditioned. Sept. 24, p. 15.

Engineer Advises Service Engineers on Residential Air Conditioning Installation Practices. Oct. 15, p. 17.

10-Min. Cycling Described as Ideal To Control Temperature, Relative Humidity In Modern Residential Air Conditioning. Oct. 22, p. 15.

Survey Shows Central Air Conditioning Can Be Balanced Year-Round Business. Nov. 5, p. 1.

What Happened To Residential Air Conditioning During 1956? Nov. 5, p. 28.

Reducing Obstacles Improves Air Conditioning Job In New Residence Contractor Works with Builder To Simplify Design Needs In Heat Pump Installation. Nov. 19, p. 28.

Electrical Characteristics of Packaged Air Conditioning Units (1). Dec. 10, p. 32.

Electrical Characteristics of Packaged Air Conditioning Units (2). Dec. 17, p. 13.

Educating Builder, Public, Installer on 'Adequate System' Deemed Vital by ASRE Residential Air Conditioning Forum. Dec. 17, p. 2.

ROOM COOLER

Window Unit Mounting Permits Access for Cleaning & Repairs. Feb. 20, p. 12.

Room Unit Market Opportunities—Are Vast Because: There Are Many Commercial Prospects, Average Income Families Buy Them, Discounters Haven't Stolen Market; and There Is Great Desire for Comfort. March 12, p. 12.

Rosy Future Seen for Room Unit Market by Cassatt; Price Cutting Described as Biggest, Sharpest Thorn. May 7, p. 12.

Dealer Finds Air Conditioning Outlook Bright—Newspaper Ads, Weather Forecasting, Window Unit Rental, Room Unit Winterization Plan Help Promote Firm's Business. May 7, p. 31.

Electric Living Show Pushes Room, Central Air Conditioners, Demonstrates Unit Selection Method and Proper Wiring Needs. June 11, p. 6.

Room Unit Storage Plan Pays Off for Dealer. June 11, p. 12.

Writer Tells How To 'Do-It-Yourself' Step-by-Step on Through-the-Wall Room Air Conditioner Installation. July 30, p. 13.

Advertising Helps 'Johnny-on-the-Spot' Dealer Sell Almost 100 Casement Units. Sept. 3, p. 16.

Refrigeration Dealer Cools 2 Rooms by Single ¾-Hp. Room Conditioner. Sept. 10, p. 16.

Penn Room Unit Sales Rise 29% over '55 Period. Oct. 22, p. 11.

See 2,000,000 Annual Room Conditioner Market Soon. Nov. 26, p. 9.

HEAT PUMP

Indoor-Outdoor Thermostats Enable Automatic Heat Pump To Balance Unit Capacity with Heating, Cooling Needs. March 12, p. 88.

Heat Pump Air Conditioning Expands West Memphis Firm's Business—Heat, Plentiful Water Supply, Even Summer-Winter Load Balance, Moderate Power Rates, Safety, Constant Temperature Help Sales. May 7, p. 44.

Heat Pump Prospects—Its Full Impact In Residential Field May Be 5 Years Away, Says Gilman of Carrier. July 16, p. 20.

Distributor Tells How He Got Dealers To Sell Heat Pump—Right Now—300 Unit Order Climaxes Two Years' Intensive Field Training, Promotion. Aug. 20, p. 26.

HEATING

Selling Do-It-Yourself Installations Proves Profitable Move for Small Heating Business. Jan. 23, p. 23.

Expert Tells Why Atomic Furnaces Are Impractical for Residential Heating. June 11, p. 35.

Problems of Solar Heating Include—Low Cost Energy Collector, Size of Storage System, Suitable Circulating Fluid, Energy Transport System. June 18, p. 40.

How To Get Better Heating Installations—Nessel Discusses Warm Air Heating In Terms of Human Comfort; Investigations Show Improvements Necessary. Dec. 3, p. 10.

Home Buyer's Heating Quiz—Prospective Homeowner Should Ask 11 Questions About Comfort Performance, Correct Heating Installation. Dec. 10, p. 16.

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50% of Central Units Installed In Old Homes—Jones Hits Income as Government Criterion for Air Conditioning Feb. 13, p. 1.

Room Unit Sales Up, Inventories Down, Says ARI. Feb. 27, p. 1.

'55 Home Unit Sales Up 34% In N. Y. Area. March 12, p. 1.

Compressor Shipments Hit 1,344,972—ARI—First Released Figures Show Shipments Rise 40%. July 16, p. 1.

Commercial Refrigeration

GENERAL

'Atomic Energy Era'—What Will It Mean To Our Industry and How Soon? Jan. 2, p. 1.

Leasing Store Equipment Advantageous To Dealer with Low Working Capital, But No Cure-All. Jan. 9, p. 24.

Good Accounting System Necessary for Business Success. Jan. 16, p. 22.

What's Needed for Profit In '56—Commercial Distributor Offers Some Concrete Ideas for Raising Profits. Jan. 23, p. 24.

Kold-Hold System of Continuous Truck Refrigeration Weighs Only 410 Lbs. Jan. 23, p. 32.

Well Prepared, Well Merchandised Retail Frozen Meat Items Find Place In Family Food Budget. Jan. 30, p. 10.

Commercial Refrigerator Outlook;—1956 Volume Will Be High, But Firms Must Tighten Their Belts, NCRSA Survey Suggests. Feb. 20, p. 15.

What About Food Preservation by Nuclear Irradiation?—Study Finds Irradiated Foods Stay Palatable, Apparently Harmless. Feb. 20, p. 19.

Irradiated Foods 'Taste, Smell, Look Terrible' Armour Researcher Reports. Feb. 20, p. 19.

2-Stage Compressor Solves Problem In Frozen Food Transport In Arabian Desert. Feb. 20, p. 31.

Package Unit Mixes Air, Carbonic Gas To Preserve Uniform Draft Beer Quality Throughout Barrel Tap, Eliminates Waste. Feb. 27, p. 29.

Master Baker Tells How To Prepare, Store Ice Cream Cakes, Novelties. March 5, p. 11.

Food Store Trends: Air Conditioning Now a Must; Air-Cooled Equipment Gaining Popularity; New Type Frozen Food Cases Likely. March 5, p. 17.

How Large Contractor Holds Key Members of His Organization. March 12, p. 19.

Sell Wives on Product, Husband's Status to Increase Commercial Sales. March 19, p. 18.

Attractive Showroom, Product Demonstrations, Replacement Parts, Service Mindedness Help Boost Distributor's Sales. April 9, p. 40.

2 Compressors Hold Hospital's 5 Freezer Rooms at 10,-20°; Time Switches Control 2 to 55 Min. Defrost Cycle In Units. April 16, p. 19.

New York League Helps Farmers Finance Refrigerated Bulk Milk Cooling Tanks. April 16, p. 21.

One User's Ideas on Refrigerated Milk Trucks. April 16, p. 28.

Inventory Controls, Purchasing Plans, CRMA Production Conference Topics. April 23, p. 26.

How to Build Commercial Refrigeration Into a $2,000,000 Business. May 7, p. 24.

Contractor Finds Profit In Variety of Operation Including Wholesale Unit Rebuilding. May 7, p. 38.

New Refrigerants Can Produce Ultra-Lowtemp Cooling for Liquid Gas Storage, Nuclear Studies. May 21, p. 32.

Faster Pulldown In Hog Carcass Room Cuts Shrinkage In Oldest Smithfield Ham Producer's Slaughtering, Cutting Plant. May 28, p. 15.

Experiments Show—Antibiotics Can Keep Fish, Red Meats Fresh Longer; Up Poultry Shelf Life. June 11, p. 24.

Empty Parked Trailers Maintain Zero° Temperature 4 Hours In Pulldown Test. June 11, p. 25.

A 'New Supermarket Trend' Seen In Fort Wayne Emporium Type Store. Aug. 27, p. 1.

Bucketed Beer Bottles—Ice Machine Dealer Shows Restaurants, Groceries How To Use More Ice for Added Customer Appeal and Profit. Sept. 17, p. 12.

'Modified Atmosphere' Apple Storage Bldg. Controls Temperature, Oxygen, Carbon Dioxide. Sept. 17, p. 19.

Purdue Announces Establishment of Refrigeration, Climate Control Center. Sept. 24, p. 1.

'54 Census Data on Refrigeration Show 71% Rise. Sept. 24, p. 1.

Ways Industrial Community Puts Refrigerating Machinery To Work. Oct. 8, p. 18.

Refrigerated Shelving Seen as Sales Booster; Performs Well Mechanically. Nov. 5, p. 30.

Contractors Comparative Business Status—1954-55 RACCA Finds Profit Drop as Volume Rises. Dec. 17, p. 13.

What Refrigerated Fixtures Are 94 Bristol Food Stores Using? Dec. 17, p. 22.

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Detroit Commercial Sales—Contractors Installed 1,303 Units In 1954; Total of 408 Placed In First Half of 1955. Jan. 16, p. 82.

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Tranter Truck, Trailer Refrigeration System Described at Mich. RSES Factory Clinic. March 26, p. 18.

Frozen Foods, Freezers, Lockers

Well Prepared, Well Merchandised Retail Frozen Meat Items Find Place In Family Food Budget, NAFC Hears. Jan. 30, p. 10.

42% Frozen Food Cabinet Gain In 5 Yrs. Reported. Feb. 13, p. 1.

Frozen Food Distributors Advised To Boost Retail Storage Space, Not Build Warehouses. Feb. 27, p. 12.

Food Store Trends: Air Conditioning Now a Must; Air-Cooled Equipment Gaining Popularity; New Type Frozen Food Cases Likely. March 5, p. 17.

Wet Storage Batteries Kept In Upright Freezers Hold 90% Capacity a Full Year. April 9, p. 41.

Frozen Food Prospects, Problems—More Adequate Refrigerated Transport, Shorter Handling Time on Loading Docks, Colder Retail Storage Needed. Aug. 13, p. 14.

Studies Show Need for Right Freezer Temps.—Food, Warehouses Men See Need of Education In Distribution Areas. Sept. 3, p. 1.

It Didn't Just Happen—How Dealer Sold 23 Freezers as Direct Result of It's Sportsman's Show Exhibit. Dec. 10, p. 7.

'Try Before You Buy' Freezer Rental Plan at Usual Monthly Payment Finds Many Convert to Ownership In Four Months. Dec. 17, p. 6.

Household Appliances

Hidden Dangers of Price Cutting—Unrealistic Pricing, Poor Inventory Control, No Measure of Operating Costs—These Lead to Business Failure, Expert Says. March 5, p. 6.

When and How To Stage Sales Promotions To Get Greatest Return from Your Effort. Feb. 27, p. 22.

Suggestions on Financing for Small Dealers—Give Bank Credit Statement, Ask Banker's Advice, Build Credit & Sales Reputation; Use Warehouse, Floor-Plan, Unsecured, Instalment, Collateral Loans, Discount Sales. April 9, p. 8.

12 Amp., 1 Hp. Unit Ready for '57 Lines—Special Compressor, Motor Operate Unit on 115V. Separate Line. July 2, p. 1.

NARDA Reports Net Profit Ratio to Sales Rises to 3.4% for 1955—Dealers Hit 10 Yr. Low In Goods' Cost Sold with Peak Gross Margin of 34.3%. Aug. 13, p. 22.

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California Bans Dairy 'Giveaways' to Obtain Business. May 21, p. 1.

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Drying 'F-22' Systems—There Are Special Measures To Be Observed In Using Vacuum Pump and Other Procedures. March 12, p. 47.

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Water Treatment—3 Basic Principles Combined with Common Sense Can Increase Chances for Trouble-Free Operation. April 9, p. 14.

Sizing, Locating Cooling Tower Pumps—To Hydraulically Size Pump One Must Know G.P.M. Capacity Needed and Ft. of Water Head When Pumping the Required Amount of Water. May 14, p. 26.

Contractor Finds Profit In Variety of Operations Including Wholesale Unit Rebuilding. May 7, p. 38.

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Product Knowledge, Protective Maintenance, Trouble-Shooting, Adjustment, Repair of Electric Motors (4). July 2, p. 20.

Requirements for Chemicals To Correct Water Scale Problems Should Be Economical, Stable, Easily Controlled, Fast, Convenient To Buy, Handle, Harmless to Equipment, Expert Says. Aug. 6, p. 24.

Moisture Indicators, Driers Keep Tabs on Huge Supermarket's Refrigeration, Air Conditioning Units—Service Mgr. Believes Strainer Essential To Low Temp Applications. Oct. 8, p. 11.

Refrigerant Distributors—Distributors for Direct Expansion Multi-Circuit Evaporators Boost Efficiency of Coils over Broader Percentage of Loading. Oct. 15, p. 21.

Proper Way To Start Up, Check Out Systems. Nov. 12, p. 23.

AIR CONDITIONING EQUIPMENT

Nash Offers Manuals, Parts, Rates to Refrigeration Men To Assure Proper Service on Auto Air Conditioning. Feb. 20, p. 20.

Tips on Blower Installations—Put on Belt Adjuster, Keep Flat from Oiled Bearing, Line Up Variable Pitch Pulley With Motor Pulley, Install Belt by Hand, Loosen, Remove Blocks, Clips, Locate, Run Blower. June 11, p. 10.

Trouble-Shooting Air Conditioning Jobs—Analyze 'Chronic Problem' Job, Find and Correct Trouble, Work Out Zone Problems, Check Control Arrangements, Watch Operation. Sept. 24, p. 6.

Service Know-How for Residential Systems. Dec. 10, p. 36.

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No. 9 in a series on refrigeration

Fig. 1

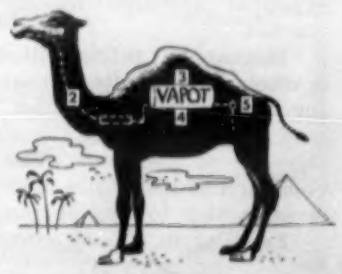

DIAGRAM A.

The above diagram represents a cut-away section of a camel and illustrates the efficiently engineered main working parts.

Designed for use as a beast of burden on the desert, the camel is engineered to operate on stored water and can go three days without a drink. Even Harvard men can't do this.

There are two main types of camel—the double-tank Bactrian and the single-tank Dromedary job, illustrated. Both work on the same principle.

Water is taken in by a schlooper-type intake valve (Fig. 1) and conveyed by tubes (Fig. 2) to a diverticular manifold and thence to the storage tank or hump.

Then—ah yes—then when the camel needs some water a sphincter diaphragm is automatically activated by the important feature of the camel the name of which escapes us at the moment. But (Fig. 5) . . . whatever it's called this distinctive and important feature corresponds to a factor known as **VAPOT** in refrigeration installations.

We are the sole manufacturer of **VAPOT**. What that **thing** does for the camel **VAPOT** does for refrigeration. **VAPOT** enables a refrigeration job to refrigerate better. It de-ices and defrosts — suddenly, efficiently. Darndest thing. Produces better refrigeration and cuts operating costs. May we send you or your engineers technical data? Write:

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SINCE 1932

REFRIGERATION ENGINEERING, INC.
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Phone: RAymond 3-3281

PRESSTITE
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TRADING AREA APPROXIMATELY 1,000,000

Exclusive distributorship available for the popular Hussmann line of food store equipment. The complete line of display refrigerators, coolers, condensing units, shelving, check-outs and merchandisers represents excellent opportunity for aggressive operator to grow with California.

Distributor selected must have sound character plus a knowledge of and interest in modern food merchandising.

We will help you build a profitable business. All of the facilities and know-how of the Hussmann organization would be at your disposal. Write Hussmann Refrigeration, Inc., 2401 North Leffingwell, St. Louis 6, Missouri, or contact C. A. Hulsman, Division Manager, Hussmann Refrigeration, Inc. P. O. Box 213, Millbrae, California. Telephone: Oxford 7-4589.

Mechanical Refrigeration Seen To Aid Milk Distributors

Dry Interior Prolongs Body Life; Dry Container Attractive; Use Truck for Storage; Driver Has Fresh Clothes; Returns Kept Inside

ATLANTIC CITY, N. J.—The price the milk distributor must pay for the advantages of mechanical refrigeration in his delivery trucks are extra service and maintenance.

"However, the end does justify the maintenance," declared John C. Green, transportation supervisor of Southern Dairies, Inc., Charlotte, N. C.

Speaking at the 49th annual convention of the Milk Industry Foundation here, Green outlined the advantages and disadvantages of mechanical truck refrigeration systems and reviewed each of the five different types of systems now on the market.

"Mechanical refrigeration as a whole has definite advantages for the (milk) distributor," he said. "The dry interior prolongs the life of the body. The dry condition of the bottle or carton is attractive to the customer.

"Loading in the afternoon or early evening is possible. Use of the body as a storage facility can ease the pressure of overcrowded chill rooms.

"The driver who is more likely to meet his customer starts the day in fresh clothes not stained by loading. Returns can be left in the body, saving multiple handlings.

"Disadvantages of mechanical refrigeration are larger initial investments, heavier bodies, and maintenance."

The five types of systems now on the market can be classified as self-contained, direct, electric, hydraulic, and hold-over.

SELF-CONTAINED UNIT EXPLAINED

"The self-contained group are those that furnish their own power and can operate independently of the truck or of a power connection. These units have a gasoline engine as the prime mover.

"In some systems the gasoline engine is the only power and is connected directly to the compressor. In some systems an electric motor is added to furnish standby power, and some systems have an electric generator powered by the gasoline engine.

"While in transit the generator furnishes power to an electric motor which drives the compressor. At the dock power for the electric motor is furnished by "plugging in" to the regular a.c. line.

"Installation of the self-contained systems is relatively simple. Having no connection to the truck, installation is a matter of proper preparation of the body.

"One manufacturer has his system in two parts. The condensing unit with the gasoline engine is mounted on brackets on the outside of the body, the evaporator is mounted inside the body. Holes in the front body wall are provided for the fan shaft and the refrigerant lines.

"Another manufacturer has his system assembled into a single unit. The evaporator passes through a large opening in the front body wall. The electric generator type units can be divided into two or three units.

"One unit, the evaporator, is installed inside the body with holes in the body walls or floor for the refrigerant lines and the electric line. The condensing unit can be installed with the generator in any place where sufficient air for cooling is available.

INSTALLATION OF UNIT

"While installation of these units is simple their maintenance can be involved. First, there is the maintenance of the gasoline engine. This requires a skill not necessarily present in the usual refrigeration serviceman.

"It is not unusual to require the services of an automotive mechanic and a refrigeration serviceman at the same time. The gasoline engine is subject to all the usual ills of valves, carburetors, timers, and pumps. These are in addition to the refrigeration service problems.

"When we add the electric generator we add to maintenance problems. An electrician now is needed to care for the generator. Three servicemen at one time! However, where a fleet is concerned one serviceman usually develops skill in all three fields and eases the maintenance problem.

"The direct group are those that receive their power directly from the truck by means of belts, shafts, and power-take-offs.

DIRECT DRIVE GROUP

"First to be considered, is the type having a compressor mounted under the hood and belted directly to the truck engine. This type can be made the simplest of all. With a compressor under the hood a condenser and receiver suitably located a condensing unit is at hand. However, its simplicity limits its usefulness to the time during which the truck engine is operating.

"The simplicity of the system is not an indication of the difficulties of installation. The compressor is usually mounted on a bracket similar if not a duplicate of air compressor brackets. In the majority of cases the fan pulley on the crankshaft has to be changed to add the extra belt or belts.

"This makes necessary the removal of the radiator and frequently means moving the radiator and altering the radiator supports. Adaptors have to be added to the fan so the fan will clear the belts.

"Since this system refrigerates only while the truck engine is operating, it is useful only for over-the-road operation. To broaden its use to include 'stand-by' or 'dock-side' refrigeration means the addition of a completely separate condensing unit with an electric motor.

"Two compressors add oil level complications to the refrigeration serviceman's problems. Since the compressor under the hood operates all of the time, the truck engine is running, some means of controlling the refrigeration is needed. This is usually a by-pass valve. Normally trouble-free, the valve is one more item for the serviceman to worry over.

POWER TAKE-OFF SYSTEM COVERED

"The second type in this group is the type receiving its power through a power take-off. The refrigeration serviceman's problems with this system are the same ones he has with any refrigeration subject to bouncing over the highways.

"The auto mechanic is handed extra service items. If the power take-off is not properly built and installed it becomes very noisy. It adds wear to the transmission and not infrequently chips edges of the gear teeth.

"Space is always at a premium on refrigerated trucks, consequently, power take-offs are often installed very close-coupled so the angle through which it operates is excessive. This is rough on the universal joints.

"The by-pass valve mentioned above can be used to control refrigeration. However, some means of disconnect is preferred.

"Manual engaging and disengaging the power take-off is used to disconnect when refrigeration is not needed but as a control of temperature it is not satisfactory. The most prevalent means of control is by some type of clutch.

"Hydraulically operated clutches controlled by a solenoid have been used but are being replaced by electric clutches. These clutches are usually used in connection with a gear reduction. Both the electric clutch and the gear reduction need service. The electric clutch has a slowing device to lighten the shock of suddenly imposing the load of starting the condensing unit.

"A third type in the direct power group is the type driven by a flexible shaft. The front end of the flexible shaft is belted to the crankshaft pulley. This necessitates removing the radiator, relocating the supports and often requires cutting through a frame cross-member. The control system is an electric clutch.

HOLD-OVER truck refrigeration system is used in Divco retail delivery truck.

ELECTRIC GROUP DESCRIBED

"The third group to be considered is the electric group. In this group power from the truck engine is used to generate an electric current which in turn drives the electric motor or motors. There are two types in this group.

"The first type has an alternator belted to the crankshaft. The alternator generates three-phase alternating current which is rectified to direct current.

The direct current is regulated and applied to series wound compressor and fan motors.

"For stand-by use the system is plugged into a standard a.c. outlet. Originally only available for 115 volts a.c., this system is now available for 230 volts.

"In addition to the refrigeration serviceman an electrician will be needed on occasion. The under-hood mounting of the alternator adds to the auto mechanics difficulties.

"The electrical components, alternator, rectifier, voltage regulator, and d.c. motors are furnished from a single source. The other components of a refrigeration system, the compressor, condenser, receiver, evaporator, valves, etc., must be secured elsewhere. Therefore, it is necessary to use a belt driven compressor.

"This type of system is characterized by constant capacity. The voltage regulator keeps the voltage constant within a very small percentage.

The speed of the truck is not a factor in the refrigeration capacity.

"The second type in this group also has an alternator mounted under the hood with the same installation and service problems. This alternator also generates three-phase alternating current. There is a magnetic regulator that maintains the voltage frequency relationship.

"In this type the a.c. current is not rectified but is applied directly to the motors. This system due to its supplying a.c. current can utilize hermetically sealed or semi-sealed motor compressors.

"However, the refrigeration capacity varies with the speed of the truck engine. The a.c. current applied to the motors can and does vary from about one-half rated voltage to 1½ times rated or name plate voltage.

"Some work is being done experimentally on using a variable

(Concluded on next page)

Guide to 1956 NEWS Stories--

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Emergency Diagnosis, Repair of Hermetic Unit Electrical Components (4) Checking Very High Capacitance of Capacitor, Checking Motor Overload Descrized by Zant. June 11, p. 30.
Moisture—Its Causes and Cures—Film Strip Demonstrates How To Keep Moisture Out of System and How To Remove It If It Gets In. Oct. 22, p. 20.
Planned Maintenance for Cooling Towers & Condensers. Nov. 5, p. 32.
Refrigerant Piping. Nov. 19, p. 30.
Refrigerant Piping. Nov. 26, p. 19.
Refrigerant Piping. Dec. 3, p. 26.

P. B. REED ARTICLES

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Two Temperature Solenoid Valve, March 5, p. 19.
Spring Service on Room Conditioners:
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AUTOMOBILE AIR CONDITIONERS

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Pickus Outlines 8-Step Selection Plan To Help Retailers Hire Best Salesmen. March 12, p. 54.
Our Industry Fails To Attract Youth of America, Wholesalers Told Lack of Good Men Contributes To Rising Cost Picture. Aug. 20, p. 7.

Advanced Mfg. Methods

Mechanized Assembly Track, New Processing Operations Speed Up Room Conditioner Line. Oct. 1, p. 44.
How Sutton Controls Moisture Content of Its Room Air Conditioners. Oct. 1, p. 48.
No Mold, Little Tooling Needed To Produce All-Plastic Refrigerator Cabinet. Oct. 1, p. 18.
Automatic Moisture Detector Allows Speedy Check on Production Line. Oct. 1, p. 30.
Automatic Test Board, 6-Station Welder, 2-Spindle Honer Help Maintain Standards. Oct. 1, p. 24.
Overhead Conveyor System Allows Centralized Air Conditioner Crating. Oct. 1, p. 22.
'Dog-Bone' Finned Coil Eliminates Soldered Joints In Single Row. Oct. 1, p. 36.
Condenser Manufacturer Operates Own Brass Mill. Oct. 1, p. 42.
How Cost Reduction Committee Puts Ideas Into Action . . . Group Cuts Costs by 5% In 2 Years by Meeting Weekly, Following Through on Ideas. Oct. 1, p. 56.

For more information about products advertised on this page use Information Center, page 16.

NEW Thermo-King Corp. hydraulically driven truck refrigeration unit that operates off the truck engine, weighs 445 lbs.

TWO-TEMPERATURE truck body operates off one compressor for continuous refrigeration. Made by Tranter Mfg. Co., this new unit illustrates the direct type of truck system, receiving power through a power take-off.

SELF-CONTAINED 1-hp. York hermetically sealed truck refrigeration system operates off an a-c- generator and voltage regulator that provides current at any engine speed.

Truck Systems--

(Concluded from preceding page)

pitch pulley to drive the alternator in an effort to limit this wide range of voltages.

HYDRAULIC GROUP NEWEST TYPE

"The hydraulic group is the newest in the field. Few systems look as simple on paper as a hydraulic system. Few develop as many problems.

"The first sentence about hydraulic refrigeration systems being the newest is perhaps a little misleading. There has been a hydraulic system available for several years. A tremendous amount of work has gone into it.

"Several years ago another company spent a large amount of money on developing a hydraulic system but finally abandoned it. The new system is the constant-volume, variable-displacement system that has developed so rapidly in the last couple of years.

"This system available from several sources has a variable displacement pump mounted under the hood and belted to the crankshaft. As the speed of the truck engine is increased the flow of oil controls a wobble-plate which in turn controls the length of stroke of the piston.

"As the speed increases the length of stroke decreases maintaining an even output. The oil flows through flexible hose to the condensing unit where a hydraulic motor turns the compressor.

STANDBY REFRIGERATION

"For standby refrigeration an electric motor can be belted in series with the hydraulic motor. As the output of the hydraulic pump is fairly constant so the speed of the hydraulic motor is fairly constant and the refrigerant capacity remains level.

"The refrigeration is controlled by a solenoid operated by-pass valve in the hydraulic pump. This same solenoid is used to delay the action of the pump when the truck engine is being started.

"The hydraulic system poses new problems of service. Few mechanics have an understanding of hydraulic systems. Adding the hydraulic service to the refrigeration serviceman's burden is out of the question.

"The hydraulic system is a high pressure system and a pulsating pressure system. If the hose connecting the pump to the motor is not rigidly fastened and properly insulated from panels, a bothersome drumming will result.

"The main service factor in these hydraulic systems is the installer's responsibility. This factor is absolute cleanliness. Small particles of trash cause a lot of grief when they reach the pump. Care should be exercised by the user in making the change from summer weight oil to winter weight oil, and the reverse, to keep containers, funnels, etc., clean.

HOLD-OVER GROUP DISCUSSED

"The last group is the hold-over group. Hold-over plates are rectangular tanks varying in thickness from about ¾ in. to 3⅛ in. These tanks contain tubing for the circulation of refrigerant and an eutectic solution that freezes in the proper range for the intended use.

"The refrigeration is based on using the latent heat of fusion of the eutectic. As this is a basic law of nature little difficulty occurs with the hold-over plate itself.

"The hold-over solution may be frozen from a central refrigeration system, from a refrigeration system built into the body but operated only at night, or with one of the foregoing systems of over-the-road refrigeration.

"In the latter case thin plates are used and the hold-over capacity is utilized for its 'flywheel' effect or as an insurance in case of mechanical failure of either truck or refrigeration when away from the plant.

"Hold-over systems are usually characterized by heavy weight, though some work is being done on aluminum plates.

OTHER SYSTEMS

"In addition to the foregoing classified systems there are available 'wet' ice and carbon dioxide systems. Two wet ice systems might be classified as mechanical refrigeration.

"Both methods involve forcing the air within the truck over, or through cracked ice. The primary difference being that the larger system uses a gasoline engine to move the fan, the smaller system uses an electric motor and is thus limited in size.

"Currently, two carbon dioxide systems are being sold. One has a small d.c. motor driven fan, thermostatically controlled, forcing air through an aluminum bunker. The solidified carbon dioxide rests on the floor of this bunker and air is passed in a tunnel under the floor.

"The second system is a large system and uses a gasoline engine to circulate the air. A third system is in the experimental state. This system utilizes the pressure developed by the sublimation of the 'dry ice.'

"In the transition from 'wet ice' alone, or from hold-over plates refrigerated from a central system, we must reconcile ourselves to the extra service or maintenance that we pay as the price of lighter weight and more flexible equipment.

SERVICE PROBLEMS CITED

"These service problems may be non-standard parts such as heavy duty fans for the truck motor, crowded conditions under the hood as we add compressors, alternators, pump, extra belts to keep tightened, extra lubrication, extra periodic inspections, care and inspection, oil changing and fueling of extra gasoline engines, the electrical care and inspection routines the same with the hydraulic systems.

"All in all it sounds formidable but it isn't. The men charged with the service quickly develop all the skills necessary being concerned only at the beginning by the multiplicity of troubles that can and do occur.

"However, the end does justify the maintenance."

J. Bowles To Retire from Cory

CHICAGO—After 20 years of service with Cory Corp., veteran Detroit Territory Manager Joe Bowles will retire the day after Christmas.

He has covered the Motor City area plus out-state Michigan from Traverse City south to the state line and northern Indiana for over a decade for Cory.

Bowles started his Cory career in January, 1936 and his first year sales totaled $19,536.62. Recently, he happily projected his 1956 sales for a grand total of nearly one million dollars.

After Jan. 1, Joe and Agnes Bowles will reside on the Gulf Coast of Florida.

AIR CONDITIONING & REFRIGERATION NEWS

REPRINTS

The following articles have appeared recently in Air Conditioning & Refrigeration News, and are now available in reprint form. Supply of some reprints is limited. The order coupon below can also be used to obtain "selected" reprints not listed by giving title, page, and issue date.

BOOKLET FORM

A) "AIR CONDITIONING THE HOME"
A comprehensive study on year 'round residential air conditioning—seven sections including, why people buy it, market conditions, how to sell it, estimating costs for various types of installation, FHA requirements, plus much more valuable information. 9" x 12" in size, finely printed and profusely illustrated.
Only $1.00 each.

B) "COMMERCIAL PACKAGED AIR CONDITIONERS AT WORK"
70 pages, 9" x 12"—the first comprehensive book covering this important segment of the air conditioning industry. Includes market, survey information, commercial, institutional and industrial applications, and a complete explanation of the fast growing segment of the commercial market—packaged heat pumps.
Only $1.00 each.

C) "'SHORT, SHORT' COURSE IN AIR CONDITIONING FUNDAMENTALS"
A brand new booklet just off the press dealing with air conditioning in basic, understandable terms. Five sections, including Air, Moisture; How to distribute air; Trouble-shooting air; Ventilation, Filtration; Sound, Comfort.
Only 25¢ each.

D) "PRODUCT KNOWLEDGE, PROTECTIVE MAINTENANCE, TROUBLE-SHOOTING, ADJUSTMENT, REPAIR OF ELECTRIC MOTORS"
A discussion by T. N. Schierloh, service technical manager of General Motors' Delco Products Div., on servicing refrigeration and air conditioning motors.
Only 40¢ each.

E) "COMPARISON OF REFRIGERANTS 12-22"
Paul Reed presents a complete digest and factual comparison of the two refrigerants 12 and 22. Twelve fact-filled pages to help prevent troubles that have been and are now being experienced in the field.
Only 75¢ each; 50 or more copies, 50¢ each.

Everyone concerned with air conditioning should read the above books and keep them handy for reference purposes. Order your copies now.

PAMPHLET FORM

1) Humidity Control In Home Cooling
2) Distributor Tells How He Got Dealers to Sell Heat Pumps—Right Now
3) Experts Eye Home Air Conditioning
4) Packaged Units Chosen for Converting Warehouse to Office Building
5) Proper Refrigeration Zone Use Adds to Food Life
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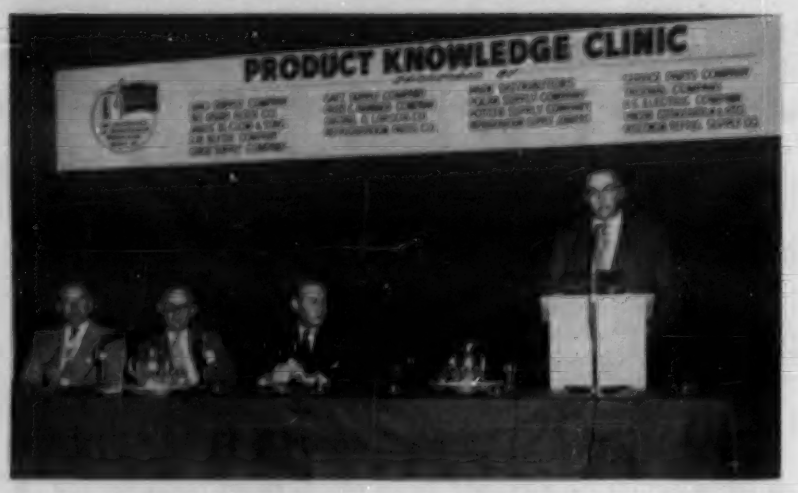

PREDICTING A FUTURE FULL OF new products and trebled volume for air conditioning and refrigeration wholesalers, this panel painted a rosy picture of the next decade for contractors attending the first "Product Knowledge Clinic" at Chicago. From l. to r., they are Carl Shinneman of Polar Supply Co., Peoria; Harry Alter of Harry Alter Co., Chicago; G. R. Kinnally, James B. Clow Co., Chicago; and A. Starr Hull, executive secretary of the Air Conditioning & Refrigeration Wholesalers Association.

Conference Tables Were Busy Places . . .

. . . . at the Product Knowledge Clinic where some 200 contractors and their employes were able to sit down with representatives of 59 equipment manufacturers and get those bothersome questions answered. The atmosphere was informal and the table of each manufacturer easily identified. Many tables were laden with new literature and small products and parts.

First Product Knowledge Clinic--

(Concluded from Page 1)

Clinic" was sponsored by Region Six of ARW (Chicago and surrounding area). Supplies wholesalers from other regions as distant as Arizona and the Carolinas, as well as national ARW officers, were on hand to look over the affair and evaluate it with a thought of holding future conferences and an eye to any changes that might be made in programming if future conferences are held.

5 Panel Discussions

In addition to the discussions at the conference tables, five formal panel discussions were conducted by manufacturer representatives and wholesalers on a wide variety of subjects.

These included water saving devices, flow controls, air conditioning tools and their applications, the air conditioning wholesaler as a partner to the contractor, and refrigerant applications.

In one panel discussion, three Illinois wholesalers saw themselves as the partner of the contractor and a rosy future ahead for both—if.

Harry Alter of the Harry Alter Co., Gerry R. Kinnally of James B. Clow Co., both of Chicago, and Carl Shinneman of Polar Supply Co., Peoria, comprised the panel. A. Starr Hull, executive secretary of the ARW, was moderator.

Wholesalers' Growth

Alter noted that the wholesalers handled about 2,000 items 20 years ago and stocks 10,000 today. Shinneman said the wholesaler's business has increased three to four times in the past 10 years and should triple again in the next 10.

"We're going to see bigger changes in the next 20 years than we have in the past 20," Shinneman asserted. He foresaw the wholesaler, in addition to handling all the belts and valves he does today, stocking electronic parts, transistors, and resistors tomorrow.

Sees Contractor Becoming Specialist

The contractor, in the next five to 10 years, Alter predicted, will become a specialist in certain phases of air conditioning and refrigeration. He will adopt a policy of majoring in one or two lines, dealing with one or two wholesalers as a prime source.

Alter believes that the contractor will have to organize himself financially to handle the many new products that will be introduced in coming years.

"He must preserve his capital and add to it out of earnings if he is going to take care of the work that will be coming his way in the next five years," Alter said.

Need More Young Trained Mechanics

He further stressed that the contractor will have to train more young men to be refrigeration and air conditioning mechanics in order to handle the broadened volume of business expected.

"The biggest problem today is personnel," he asserted. "Craftsmen and mechanics are very scarce. We can hardly keep up with existing equipment. With all the new products coming up in the next few years, what is going to happen?" he asked.

Kinnally expressed the opinion that the wholesaler has been a good partner to the contractor. By having equipment on hand when the contractor needs it and storing it for him where he can reach it quickly, the wholesaler has helped the contractor to get jobs that he would not be able to get otherwise, Kinnally believes.

Alter added that the wholesaler saves the contractor a lot of detail work that he would have to perform if he tried to do without the wholesaler's services.

For instance, Alter pointed out, the contractor with one check to the wholesaler, can pay for equipment from 40 different manufacturers. Otherwise, he would have to make out 40 separate checks each month, with all the extra time and bookkeeping involved.

Water Saving Devices

Participating on the panel on water saving devices, moderated by Larry Jenning of Dunham-Bush, Inc., were Otto J. Nussbaum of Kramer Trenton Co. and Robert Nelson of Halstead & Mitchell. Nussbaum described air-cooled condensers, while Nelson discussed cooling towers and evaporative condensers. Jenning concluded that there was no one best type of water saving device. The one to be used would depend on the conditions faced on a particular job.

Flow Control Panel

Delta Albright of Controls Co. of America moderated the panel on flow controls. Panelists were Don Rentschler of Sporlan Valve Co., J. A. Schenk of Alco Valve Co., and Willis Stafford of Detroit Controls Corp.

Rentschler pointed out that there is no standard rating for comparing one drier to another today. He said the Air-Conditioning & Refrigeration Institute is preparing a standard that should be published next year. It is hoped that this standard will eliminate the present confusion about driers, he asserted.

Stafford noted that ratings are now being realigned on solenoid valves and new standards on these should be ready within the next year. Schenk described the proper application of thermostatic expansion valves.

Under the direction of moderator James Emmett, Jr. of J. P. Marsh Corp., Edward S. Turner, Jr. of Linde Air Products described the steps in good soldering and use of leak detectors while George Franck of Imperial Brass Co. talked of tube cutting and flaring.

R. H. Israel of Virginia Smelting Co. led the discussion on refrigerant applications. He threw prepared questions to George Schnier of American Potash and Chemical Corp., Dr. Walter O. Walker of the University of Miami, and Dr. Ralph C. Downing of Kinetic Chemicals Div. of E. I. du Pont de Nemours & Co., Inc.

Safety Discussed

James McKeague, assistant to the deputy chief boiler inspector for the city of Chicago, talked briefly on safety in the manufacture and installation of refrigeration equipment of all types.

He briefly described the Chicago refrigeration code and noted that it was available to anyone at 25 cents for each copy.

He also called on manufacturers not to skimp on wall thicknesses of their pressure vessels and setting their safety valves lower to compensate for it. Setting the safety valve too low, he said, causes refrigerant leakage and results in owners having to call the serviceman every couple of months to add more refrigerant.

This encourages some people to plug up the safety valve, he declared.

"Someday, one of these systems is going to blow up and then someone is going to jail on a manslaughter charge," he warned.

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Fabulous Texas offers a real opportunity for aggressive man to supervise present dealers and appoint new ones. The SHERER line of super market refrigerators is competitive and supplemented by an accepted line of tavern refrigerators for bread-and-butter sales. Write brief resume of experience, present connection to Sherer-Gillett Company, Marshall, Michigan.

Government Contracts

SYNOPSIS OF PROPOSED PROCUREMENT

ARMY

Corps of Engineers, U. S. Army, Office of the District Engineer, Foot of Front St., Norfolk, Va.

AIR CONDITIONING BUILDINGS 7, 8, 9, 11, 27, 2, 1, and 3, Fort Norfolk, Va.—Job—IFB CIVENG 44-110-57-13—Bid Opening 10 Jan. 56.

Contracting Officer, U. S. Military Academy, West Point, N. Y.

REHABILITATION OF REFRIGERATOR DOORS at Bldgs. 667A, 745, 674, and 606—Job—IFB MA 30-145-57-152B—Bid Opening 10 Jan. 57. Deposit of $10 in form of money order or certified check made payable to Treasurer of U. S. will be required for plans and specifications.

Ordnance Tank Automotive Command, 1501 Beard, Detroit 9, Mich.

The following are commercial items to be procured under IFB 57-1212B—Bid Opening 14 Jan. 57.

TRUCK REFRIGERATOR, minus 10 degrees insulation and motor, 24,000 GVW, 5 ton 4x2, 2 ea.

Purchasing and Contracting Office, Fort Bliss, Texas.

REHABILITATION OF EVAPORATIVE COOLERS, Fort Bliss, Texas—Job—IFB AIV-41-014-57-104B—Bid Opening 14 Jan. 57.

Sacramento District, Corps of Engineers, 1209 8th St., Sacramento, Calif.

DINING HALL AND HEATING PLANT, Airmen Dormitories, Officers, Quarters, Paving, and Utilities, Reno, Nev.—Job—IFB ENG-04-167-57-29B—Bid Opening 10 Jan. 57.

NAVY

District Public Works Office, Eleventh Naval Dist., San Diego, Calif.

INSTALL AIR CONDITIONER in IBM 704 Calculator, consisting of new air conditioning piping, electrical, concrete, equipment housing, and miscellaneous related work, Michelson Laboratory, Naval Ordnance Test Station, China Lake, Calif. Deposit of $25 required for plans and specifications—Job—IFB 7450/56—Bid Opening 3 Jan. 57.

Navy Purchasing Office, 4th & Independence Ave., Washington, D. C. Attn.: SPF-1A.

The following items are procured under IFB 600-838-57-S—Bid Opening 14 Jan. 57.

CONDENSING UNIT ASSEMBLY FOR AIR CONDITIONING, 440 V., a.c., 3 phase, 60 cycle, 3.8 ton, 8 ea.—SAME, except 26 ton, 3 ea. per Spec. MIL-R-16743(Ships) dated 7 Sept. 1955 and Amend. 1 dated 4 April 56 as modified in invitation. The material under this specification is of a type on the qualified products list.

AIR FORCE

Procurement Directorate Air Force Special Weapons Center, Kirtland Air Force Base, N. Mex. Attn.: Local Purchase Division.

REHABILITATE HEATING SYSTEMS Buildings P-400 and P-401 Wirtland Air Force Base, New Mex.—Job—IFB 29-601-57-75—Bid Opening 10 Jan. 57.

Purchasing and Contracting Office, Myrtle Beach Air Force Base, S. C.

The following items are procured under IFB 38-606-57-15—Bid Opening 27 Dec. 56.

REFRIGERATED DISPLAY CASE, MEAT CHOPPING BLOCKS, 8 ea.—MEAT SLICING MACHINE, 2 ea. (1 for commissary store), Myrtle Beach Air Force Base, S. C.

GENERAL SERVICES ADMINISTRATION

General Services Administration, Business Service Center, 7th & D Sts., Washington 25, D. C.

FILTERS, AIR CONDITIONING, FIBERGLASS, single pad, (throwaway) type —Various Quantities and Sizes—IFB R2D-81793-R—Bid Opening 12-26-'56.

Business Service Center, General Services Administration, 620 Post Office and Courthouse, Boston 9, Mass.

RELOCATING AIR CONDITIONING UNIT, Boston, Mass. U. S. Veterans Administration—Job—IFB BOS-57-90—Bid Opening 12/26/56.

General Services Administration, Business Service Center, Region 3, 7th & D Sts., S.W., Washington 25, D. C.

The following items are procured under IFB R2D-82414-R—Bid Opening 1-4-'57.

CONDENSERS, AIR CONDITIONING, Air Cooled, for outdoor instaliation, capacity 62,500 B.t.u./hr., 18 ea.—Capacity 95,600 B.t.u./hr., 4 ea.

For more information about products advertised on this page use Information Center, page 16.

Paul Reed is on an extended vacation trip, getting a well-deserved rest from his many activities in the air conditioning and refrigeration field.

During this vacation period, his "Refrigeration Problems and Their Solution" column will appear at irregular intervals in Air Conditioning & Refrigeration News.

Trane Cost Reduction Plan To Up Compressor Output 100%

LA CROSSE, Wis. — A new compressor production line, increasing present capacity by over 100%, is being installed by The Trane Co., President D. C. Minard has announced.

The installation is being achieved without ay interruption in production.

The compressors, in tons of refrigeration 10 through 150 with 12 basic sizes, provide cooling for the company's central air conditioning systems.

"The expanded production facilities are needed to meet increasing demands," noted Minard. "At the same time, we expect to achieve cost reductions through the use of completely modern equipment and assembling methods."

Scheduled for full operation by Jan. 1, 1957, the new unit features an automatic, fully conveyorized machining line and two assembly lines for different models. No hand trucking is required from start to finish.

The "L" shaped line is being partially housed in a new 24,000-sq ft. plant addition, part of Trane's current $13,000,000 expansion program.

"A special final assembly area, completely enclosed and air conditioned, will insure maximum cleanliness and control in the finished product," the company said.

The filtered air will maintain 78° temperature and 40% humidity, "assuring ideal manufacturing conditions."

Innovations on the line include a tumbling machine which automatically deburrs and cleans the compressor casting and an industrial-type washer where the units are thoroughly cleansed prior to final assembly.

Test stands check over-all performance of the compressors including correct maintenance of pressures.

Expert Opines Cooling Stocks 'Good' Investment

SAN FRANCISCO—Stocks of air conditioning and refrigeration companies are good investments because the industry faces a continuing favorable market, William Wehrmeister of the investment firm of Hooker & Fay told the San Francisco Section, American Society of Refrigerating Engineers.

Increasing voter approval of municipal bonds creates a favorable market, due to the fact bond issues finance every type of public structure, all requiring some kind of air conditioning, or heating and ventilating, Wehrmeister said.

Public awareness of increasing smog will result in a demand for more air conditioning, it was stated.

DRAWER-TYPE freezing compartments roll-out on 1957 General Electric Co. refrigerator-freezers.

UPRIGHT models only are included in G-E's 1957 food freezers, featuring "bookshelf" styling and magnetic safety doors.

G-E Unveils '57 Line--

(Concluded from Page 1, Col. 4)

built on a new principle that confines food waste until finely ground by the "Jet Metal" shredding ring.

"Filter-Flo" automatic clothes washer with fingertip selector control that provides a choice of two wash speeds and two spin speeds.

Clothes dryer with automatic control that adjusts drying time and temperature to requirements of each load and high speed drying system using larger volumes of hot air.

With flat planes and sharp corners, the new refrigerators can be set flush against the wall, tightly in a corner, or in line with other appliances or cabinets.

No Air Space Needed At Back of Unit

Forced draft ventilation through a front grille eliminates the need for air space between the back of the refrigerator and the wall, or along the sides. In addition, hinges recessed in the door permit it to be fully opened without having to provide clearance between the refrigerator and the adjacent cabinet, appliance, or wall.

This "new look" in free-standing floor model refrigerators is found in three new refrigerator-freezer combinations: 15-cu. ft and 13-cu. ft. models with the freezer on the bottom, and a 12-cu. ft. two-door combination with the freezer on top.

Both of the larger, "right side up" refrigerators have drawer-type freezing compartments which roll out. Freezer capacity in the 15-cu. ft. model is 5 cu. ft., or 175 lbs. of frozen food. The freezer drawer of the 13-cu. ft. model holds 3-cu. ft., or 109 lbs.

Refrigerator compartments of all three models have the General Electric magnetic child-safe door, opened by the touch of a toe on a footpedal. Since the door has no latch, it helps protect children from being locked inside. Wide, soft gaskets provide eight times the sealing surface of old-style door gaskets, G-E claims.

Revolving shelves and vegetable bins turn at a touch to place their contents within easy reach. Space between shelves can be increased or lessened by simply pressing a button at the front of the shelf and turning—left to raise or right to lower.

A new interior color scheme—petal pink liner and bright anodized aluminum shelves—is used in all refrigerator models including the wall refrigerator and the 4-cu. ft. "undercounter" model, used in special built-in applications.

Two other models, one with an 8-cu. ft. capacity and the other 12, complete the line. Both of these have conventional condenser coils at the rear of the unit.

All models are available in white and General Electric "Mix or Match" colors.

General Electric food freezers for 1957 include upright models only, two "bookshelf" freezers with magnetic safety doors and a roll-out model which takes up no more room than a standard kitchen base cabinet.

The "bookshelf" freezers, an 18-cu. ft. model with 640-lb. capacity and a 13-cu. ft. model with 454-lb. capacity, are uprights in the same price range as chest freezers of comparable size and quality, the company says.

Both are 30½ in. wide. Both store and display frozen food like books on a shelf to eliminate rummaging, bending, and lifting. Each shelf is a fully refrigerated freezing surface.

'Bookshelf' Upright Styling Features

Exterior styling of the "bookshelf" uprights is in the "straightline" design, like their companion refrigerators.

Other features of the "bookshelf" freezer include a glide-out basket for bulky, odd-shaped items; a juice can dispenser holding 20 cans located on the door; an ice cream conditioner that keeps four half-gallons at easy-to-dip consistency, and a nine-position temperature control.

Also styled in a "straightline" design, the "roll-out" freezer, which has a 5-cu. ft. capacity, can be installed under a kitchen counter or placed free-standing anywhere in the home to add countertop work space.

It is designed to supplement the freezer space in refrigerators already installed, and eliminate extra trips by keeping food stored in the kitchen.

In the "roll-out" freezer, frozen food is stored in two porcelain enamel storage bins mounted in a single drawer which rolls out. The unit has a temperature control with nine cold positions.

General Electric "bookshelf" upright freezers and the "roll-out" model are all available in "Mix-or-Match" colors. Interiors are in petal pink with anodized aluminum shelves and trim.

GE 'Considers' Price Rises on Many Units

NEW YORK CITY—Price increases on many of General Electric Co.'s products are under consideration, Ralph J. Cordiner, president, disclosed at a recent press conference here.

Later, it was reported that the company will raise prices on a variety of small home appliances, effective Jan. 2. It was not immediately known whether G-E would hike prices on some of its other products.

At the press conference, Cordiner said that although G-E's earnings for 1956 probably will be up 5% over those for last year, "we're not particularly happy" over this amount of improvement. He added that one of the main reasons why profits haven't shown a greater rise is that "our products are underpriced."

Cordiner noted that electrical consumer goods prices have gone up only 42% since the end of World War II, while automobile prices have trebled and some home furnishings categories have quadrupled.

Cordiner declared that, contrary to rumors, G-E is not seeking to acquire any new organization in the electrical or electronics manufacturing field. "We have no negotiations under way and we intend to buy no competitor," he asserted.

He also denied reports that the company's consumer products were losing money and were being "carried" by profits from other G-E divisions. He said profit figures for the consumer products division were approximately equivalent to the average.

At the end of the third quarter, he stated, General Electric's total sales were running at the rate of $4 billion a year, 18% higher than in the like 1955 period.

Cordiner also declared that the company is not trying to monopolize the consumer goods industries in which it competes. He said G-E welcomes "strong, aggressive competitors and many of them."

Based on first-quarter figures for this year, G-E's consumer products group accounted for 34% of the company's total sales volume, against 27% for apparatus, 18% for industrial products and materials, and 21% for atomic energy, electronics, and defense business, it was reported.

In money terms, G-E has been running at around 6% net to sales, compared to the U. S. industry average of 4.4%.

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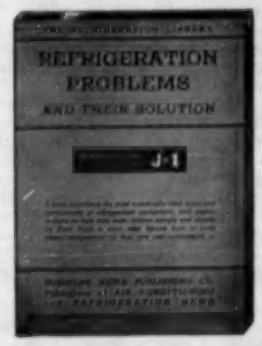

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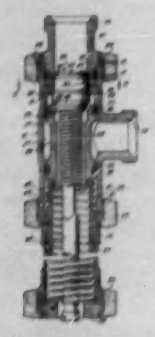
PATENTS

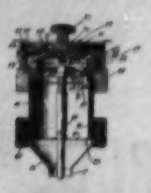
Week of July 31 (Continued)

2,756,772. PRESSURE OPERATED VALVE. Sidney B. Clark, Cedar Rapids, Iowa, assignor to Cherry Burrell Corp., Chicago Ill., a corporation of Delaware. Application Feb. 16, 1953, Serial No. 337,046. 4 Claims. (Cl. 137—596.)



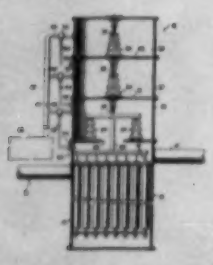
2. A double-acting valve of the class described comprising the combination of an elongated valve body having a longitudinal chamber therein, a sleeve reciprocably mounted therein, and a cooperating piston retractably mounted in said sleeve, said valve body having an inlet port at one end thereof, the valve body being provided with internal sleeve and piston seats adjacent said inlet port, and having an outlet port at a side thereof spaced from said inlet port and adapted to be straddled by said sleeve in its closed position, yieldable means being provided in said chamber to urge said sleeve into normally closed position to engage the sleeve seat, the sleeve being retractable to permit communication between the inlet and outlet ports, and yieldable means being provided in said sleeve to urge said piston into normally closed position to engage the piston seat.

2,756,773. JUICE CONCENTRATE DISPENSER VALVE. Carl C. Bauerlein, Mukwonago, Wis., assignor to The Dole Valve Co., Chicago, Ill., a corporation of Illinois. Application Sept. 13, 1950, Serial No. 184,641. 6 Claims. (Cl. 137—604.)



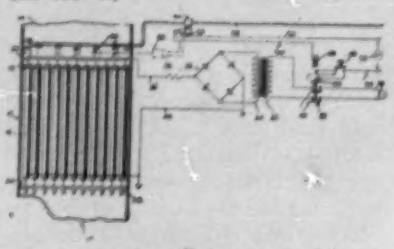
1. A valve comprising a valve chamber, a valve member mounted in said chamber for slidable movement thereabout, a valve seat adjacent one end of said chamber for engagement with said valve member, an annualr permanent magnet encircling said valve chamber adjacent one end thereof and biasing said valve member into engagement with said valve seat, an electromagnet encircling said valve chamber in spaced relation with respect to said permanent magnet and selectively energizable to move said valve member against said permanent magnet to an open position out of engagement with said valve seat, and the electrical center of said electro-magnet being located at a predetermined distance from the lower end of said valve chamber and so located with respect to the magnetic center of said permanent magnet as to automatically stop movement of said valve member into an open position prior to engagement with the end of said chamber.

2,756,838. ELECTRICAL PRECIPITATION APPARATUS. Lawrence M. Roberts, Bound Brook, N. J., assignor to Research Corp., New York, N. Y., a corporation of New York. Application Oct. 28, 1954, Serial No. 465,317. 5 Claims. (Cl. 136—7.)



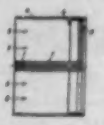
1. In an electrostatic precipitator for operation at super atmospheric pressures including a shell containing complementary discharge and collecting electrodes and a source of high voltage electricity, means for energizing the complementary electrodes comprising an insulator housing, partitions dividing the housing into a plurality of insulator compartments arranged in succession with respect to the precipitator shell, high voltage inlet bushings providing an electrical conductive path from atmosphere through successive insulator compartments to the electrodes within the precipitator shell, and means for maintaining predetermined pressure differentials between successive insulator compartments.

2,756,839. ELECTROSTATIC PRECIPITATOR. Lawrence M. Roberts, Bound Brook, N. J., assignor to Research Corp., New York, N. Y., a corporation of New York. Application Oct. 26, 1954, Serial No. 464,790. 4 Claims. (Cl. 183—7.)



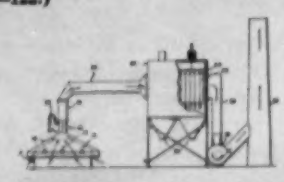
4. Control means for a liquid flush type electrostatic precipitator comprising a shell having a dirty gas inlet and a clean gas outlet, complementary collecting and discharge electrodes supported within said shell between the gas inlet and gas outlet, a source of high voltage electricity for energizing said electrodes, a liquid spray system for said electrodes connected to a source of spray liquid including a conduit connecting such source to spray outlets control means interconnecting said liquid spray system with said source of high voltage electricity for deenergizing the complementary electrodes on failure of said liquid spray system, said control means including a solenoid actuated switch between the source of high voltage electricity and the complementary discharge and collecting electrodes, a pivotally mounted control member, one end of said control member projecting into the liquid flow path within said conduit, and switch means actuated by the other end of said control means for energizing and deenergizing said solenoid switch.

2,756,840. IONIZER FOR ELECTROSTATIC PRECIPITATIONS. Friedrich Julius Maas, Zurich, Switzerland, assignor to Societe Financiere d'Expansion Commerciale et Industrielle S. A. "SFINDEX," Sarnen, Switzerland, a company of Switzerland. Application March 29, 1952, Serial No. 279,398. Claims priority, application Switzerland Feb. 21, 1952. 12 Claims. (Cl. 183—7.)



9. An ionizer for the electrostatic precipitation of solid and liquid foreign particles borne by a gas in combination with an electric supply, the carrier comprising a metal tube, a metallic spine concentrically disposed in said tube, four electrically non-conductive supports for said spine radially disposed intermediate said tube and said spine, the angle between each pair of successive supports being substantially 90°, a radioactive substance for emitting ionizing rays disposed on said spine intermediate each successive pair of supports, and means for connecting said tube and said spine to opposite poles of the electric supply and providing a superposed electrical field over the field produced by the radioactive substance in the region of said ionizing rays, neither said tube nor said spine being of a form to promote ionization.

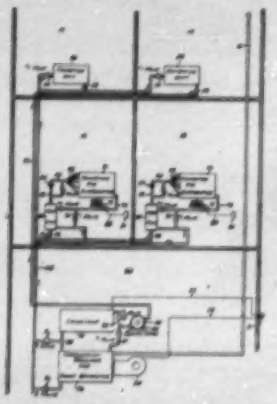
2,756,842. ELECTROSTATIC GAS CLEANING METHOD. Ralph L. Chamberlin and Carl W. J. Hedberg, Bound Brook, N. J., assignors to Research Corp., New York, N. Y., a corporation of New York. Application Aug. 27, 1954, Serial No. 452,536. 3 Claims. (Cl. 183—122.)



1. A method of dry collection of fume issuing from metal scarfing operation which comprises drawing a stream of air past a metal scarfing machine to suspend the fume and water particles issuing therefrom, passing the gas stream carrying the suspended water particles and fume through a mechanical water particle separator, to remove substantially all of the suspended water particles, and then subjecting the substantially water particle depleted gas stream to a high voltage electrostatic field whereby the fume is agglomerated and collected in a substantially dry state.

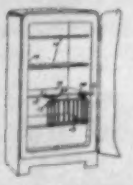
2,756,970. AIR CONDITIONING SYSTEM. Le Roy N. Hermann, Chicago, Ill. Application Nov. 12, 1954, Serial No. 468,236. 5 Claims. (Cl. 257—3.)

1. Air conditioning apparatus of a house having a plurality of separate closures therein adapted to be heated or cooled, said apparatus including a combination receiver and steam generator, a condenser, a rotary compressor, a conduit from said rotary compressor to both said combination receiver and steam generator and to said condenser, a low pressure-responsive valve between said rotary compressor and said condenser, said valve adapted to shut off when pressure of fluid therethrough reaches a predetermined maximum, a high pressure-responsive valve in said conduit between said rotary compressor and said combination receiver and steam generator, said valve operated to permit flow of fluid therethrough at higher than a predetermined minimum pressure, a supply conduit extending from said combined receiver and steam generator, a combined convector and evaporator, said supply



conduit communicating therewith, a low pressure-responsive valve in said conduit adjacent said combined receiver and steam generator, a conduit connecting said condenser and combination receiver and steam generator, a by-pass from said conduit to said supply conduit, a high pressure valve in said by-pass, said supply conduit having an expansion valve therein ahead of said convector and evaporator, a by-pass line around said expansion valve, a high pressure valve in said by-pass line and a return conduit from said convector and evaporator to said rotary compressor.

2,757,061. REFRIGERATOR CABINET LOAD SUPPORTING SHELF AND MOUNTING THEREFOR. Florence B. Anderson, Winnetka, Ill., assignor, by mesne assignments, to Amana Refrigeration, Inc., Amana, Iowa, a corporation of Iowa. Application Aug. 31, 1953, Serial No. 377,335. 6 Claims. (Cl. 312—313.)



3. A loading shelf for a refrigerator cabinet structure having a front wall provided with an access opening and having a horizontal partition supported therein opposite the access opening, and a door for the access opening hingedly mounted on the cabinet, said loading shelf being supported adjacent the front edge of the partition and depending therefrom in a vertical plane substantially parallel to the plane of the access opening and spaced rearwardly from the access opening sufficiently to enable closing of the door without interference from the loading shelf, hinge means pivotally mounting the loading shelf on the cabinet structure permitting swinging movement of the loading shelf in a forward direction from the vertical position aforesaid to a horizontal article supporting position at the front side of the partition, and releasable means for holding said shelf in said horizontal article supporting position, said shelf being pivotally mounted on the partition and slidable rearwardly relative to the partition, when in its horizontal position, the releasable means comprising a first part carried by the partition and a second part carried by the loading shelf movable into abutting engagement with the underside of the first part upon sliding the loading shelf rearwardly relative to said partition.

DESIGNS

178,358. VENDING MACHINE FOR PACKAGED BEVERAGES OR THE LIKE. Channing W. Gilson and Robert D. Mason, Los Angeles, Calif., assignors to Almon C. Woodruff, Van Nuys, Calif. Application Nov. 7, 1955, Serial No. 38,767. Term of patent 14 years. (Cl. D52—3.)

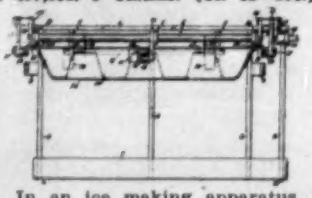
Week of August 7

2,757,518. FINNED TUBULAR HEAT EXCHANGE ELEMENTS AND QUICK FREEZING APPARATUS EMBODYING SUCH ELEMENTS. Frederick Henry Schofield, Leith, Scotland, assignor to Fresh Frozen Foods Limited, Leith, Scotland. Application Oct. 21, 1950, Serial No. 191,377. Claims priority, application Great Britain. Oct. 27, 1949. 6 Claims. (Cl. 62—102.)

1. A quick freezing apparatus comprising a heat insulated housing having a chamber, a plurality of shelves in said chamber disposed in spaced relation and one above the other, said shelves including adjacent tubes alternately connected at opposite ends thereof, means for circulating a fluid

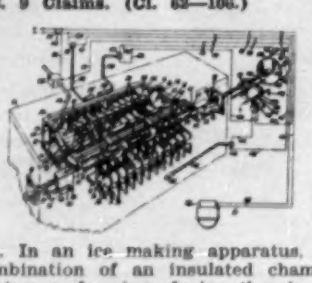
cooling medium through said tubes, baffle means located in said chamber, means for circulating a current of air in a closed circuit within said chamber, said current of air being directed by said baffle means along the outside of said tubes in the spaces between said shelves, said tubes being provided with depending outer fins on the lower surfaces of said shelves, said outer fins being substantially parallel to each other and longitudinally on said tubes, and internal longitudinally disposed fins extending within said tubes, said depending outer fins being provided with a predetermined depth in order that the surface area of said depending fins permit a rate of heat gain from the circulating air substantially equal to the rate of heat loss to the fluid medium permitted by the surface area of said internal fins.

2,757,519. ICE MAKING APPARATUS. Frederick W. Sampson, Dayton, Ohio, assignor to General Motors Corp., Detroit, Mich., a corporation of Delaware. Application Feb. 1, 1954, Serial No. 407,261. 9 Claims. (Cl. 62—106.)



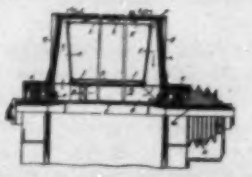
1. In an ice making apparatus, the combination of a stationary refrigerant evaporator, an elongated freezing device adapted to contain water to be frozen including a tray member and a grid member having walls disposed in said tray member for dividing the interior thereof into a plurality of ice block forming compartments, a support for said device, means associated with said support for normally retaining said device in a substantially horizontal plane with a portion thereof contacting said evaporator during freezing of water in the device into separated ice blocks in said compartments, said device being pivotally mounted on said support, means for rotating said device together with separated ice blocks therein about its pivotal mounting relative to said support and said stationary evaporator, and means rendered effective by rotation of said device for stopping the rotation of one end of one of said members thereof while continuing to rotate its other end whereby said one member is twisted longitudinally thereof from end to end to flex its walls and release ice blocks from the device.

2,757,520. ICE MAKING APPARATUS. Frederick W. Sampson and Robert E. Davis, Dayton, Ohio, assignors to General Motors Corp., Detroit, Mich., a corporation of Delaware. Application March 15, 1955, Serial No. 494,328. 9 Claims. (Cl. 62—106.)



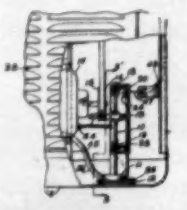
1. In an ice making apparatus, the combination of an insulated chamber having a freezing device therein including a stationary tray and a unitary grid structure removably disposed in said tray, said grid structure having walls movably interlocked together for dividing the interior of said tray into a plurality of compartments in which water is to be frozen into ice blocks, a support for supporting said device in said chamber, an ice block receiving and storage zone in said chamber, means for movably mounting said unitary grid structure within said chamber in association with said stationary tray, mechanical means for transporting said grid together with ice blocks bonded to walls thereof upwardly out of and over a side of said stationary tray beyond the vertical plane occupied thereby, and said mechanical means including means for moving walls of said unitary grid structure relative to one another, after the grid structure has been transported over said side of said stationary tray, to break the bond between ice blocks and said grid walls whereby the ice blocks are released from said grid structure and fall into the storage zone in said chamber.

2,757,521. GAS CYCLE HEAT PUMP. Alec Raymond Bennett, Moseley, Birmingham, England, assignor to Radiation Limited, London, England, a British company. Application April 30, 1954, Serial No. 426,796. 2 Claims. (Cl. 62—136.)



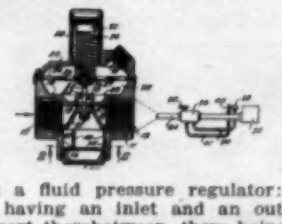
1. A thermodynamic machine comprising in combination a hollow rotor provided internally with radially disposed annular passages interconnected by inner and outer peripheral annular passages which form with the radially disposed annular passages a closed circulatory path through which a working fluid can circulate within the rotor, and can be alternately compressed and expanded with consequent heating and cooling, when the rotor is in action, so that the working fluid, when in the compressed condition gives up heat around the outer periphery of the rotor, a duct extending axially through the rotor, and arranged in thermal contact therewith so that heat transfer can take place between the working fluid and another fluid flowing through the duct, and a circulatory fan for the working fluid situated in the rotor at a position adjacent to the duct, and operatively connected to the rotor.

2,757,613. AIR CONDITIONING UNITS. John P. Dry, Winters, Texas. Application March 27, 1953, Serial No. 345,080. 3 Claims. (Cl. 103—6.)



1. An auxiliary pump mounting comprising a pair of elongated vertically disposed plates, one of said plates being positioned at a right angle in relation to the other, a horizontally disposed base plate secured to lower ends of the vertically disposed plates, a horizontally disposed web connecting upper edges of the vertically disposed plates, an intermediate horizontally disposed partition secured to inner surfaces of the vertically disposed plates and positioned between the upper edges of the plates and base plate, a pump mounted on the base plate, a vertically disposed shaft extended from the pump and rotatably mounted in the intermediate partition and web, a rectangular-shaped support extended from one of the vertically disposed plates, a vertically disposed bracket having horizontally positioned flanges on the ends, the flanges of the bracket being positioned to overlap the upper and lower ends of the support, a pin extended through the flanges and support pivotally mounting the support in the bracket with the base plate free to swing in a horizontal plane, a pulley having a friction peripheral surface mounted on the shaft, a spring extended from the support, and a flexible element extended from the support for urging the support, vertically disposed plates, and shaft against the action of the spring.

2,757,683. PRESSURE REGULATOR. Laurence C. Biggle, Altadena, Calif., assignor to General Controls Co., Glendale, Calif., a corporation of California. Application March 27, 1953, Serial No. 345,020. 5 Claims. (Cl. 137—505.36.)



1. In a fluid pressure regulator: a casing having an inlet and an outlet and a port therebetween, there being a chamber in the casing dividing said port into an inlet and an outlet section, said chamber having a conical wall portion transverse to the axis of the port and forming seating surfaces at the opposed ends of the port-sections; a tapered closure member in said chamber having surfaces engageable with said seating surfaces so as to obstruct flow through both of said port-sections, said closure member being movable endwise out of and into engagement with the seating surfaces to control flow through the port; means responsive to the pressure at the outlet of the regulator for operatively moving the closure member between closed and fully-open positions and for regulating the position of the closure member, intermediate said closed and fully-open positions, in accordance with variation of said outlet pressure; and means defining a restricted passage continuously interconnecting a part of the chamber and the outlet of the regulator.

(Continued on next page)

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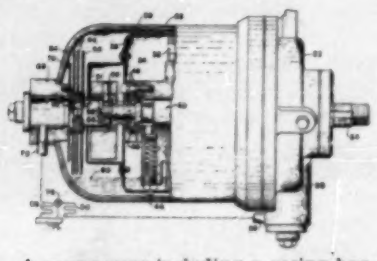
PATENTS

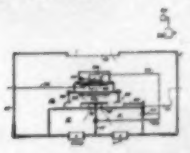
(Continued from preceding page)

2,757,858. REFRIGERATING APPARATUS. Rolf M. Smith, Dayton, Ohio, assignor to General Motors Corp., Dayton, Ohio, a corporation of Delaware. Application April 12, 1952, Serial No. 282,019. 1 Claim. (Cl. 230—207.)



A compressor including a casing having an inlet and an outlet, a compressing means having its inlet connected to the inlet in said casing and having its outlet discharging into the interior of said casing, the interior of the casing forming a lubricant reservoir, the compressing means having its drive shaft located in coaxial relationship with the outlet of said casing, a sleeve means having an open end extending over and surrounding the mouth of the outlet of said casing, the opposite end of said sleeve means being closed, the side walls of said sleeve means being provided with perforations, said sleeve means being connected to and rotated by said drive shaft for keeping the lubricant in said casing while the discharge from the compressor passes through the outlet of said casing.

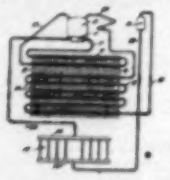
2,757,868. AIR CONDITIONING APPARATUS. Joseph W. Kreuttner, North Tarrytown, N. Y., assignor to Buensod-Stacey, Inc., New York, N. Y., a corporation of Delaware. Application March 5, 1954, Serial No. 414,414. 9 Claims. (Cl. 236—13.)



8. In an air conditioning distributing unit, air volume and temperature control means for an air conditioning unit and the like, the combination comprising an air mixing chamber, warm air and cold air inlet ports to connect with warm and cold air supply conduits, a valve plate positioned adjacent said ports and having aperture means to register with said ports for admitting air from the respective ports into the mixing chamber, said plate being movable to vary the aperture means open to the respective ports for selectively proportioning the amount of air admitted from each port, ambient temperature responsive thermostat control means connected with said valve plate, flow control means mounted in spaced relation to said plate and for movement therewith, said flow control means including fluid pressure operated means connected with said supply ducts and having a yieldable member movable relative to said plate to control flow through the plate, and means responsive to pressure changes in said mixing chamber to vary the pressure acting on said fluid pressure operated means proportionally to said changes so as to maintain a constant volumetric rate of flow through the plate.

REISSUES

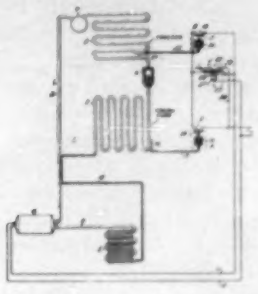
24,192. MOTOR COOLING SYSTEMS. Gordon M. De Jarlais, Dallas, Tex., assignor, by mesne assignments, to Whirlpool-Seeger Corp., St. Joseph, Mich., a corporation of Delaware. Original No. 2,459,311, dated Jan. 18, 1949, Serial No. 669,756, May 15, 1946. Application for reissue Oct. 30, 1952, Serial No. 317,851. 9 Claims. (Cl. 62—117.75.)



1. The method of refrigeration which comprises withdrawing vapor from an evaporator directly into a compressor located outside of a motor housing, compressing the vapor and discharging the superheated and compressed vapor directly from the compressor into a preliminary cooling condenser, partially condensing the vapor and consolidating the oil entrained therewith into droplets in said condenser and conducting the partially condensed vapor and oil from the condenser into an upper part of the housing of a motor driving said compressor and having a housing separate from said compressor, causing the condensed liquid refrigerant and oil to run down in the motor housing to cool the motor parts, the refrigerant again evaporating in this cooling operation, and the oil being separated and collected in an oil sump, and discharging the vapor substantially without oil from the top of the motor housing into a main condenser, where it is cooled and liquefied for use in the evaporator.

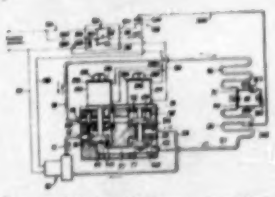
Week of August 14

2,758,446. TWO CONTROL TWO-TEMPERATURE REFRIGERATING SYSTEM. Frank A. Schumacher, Erie, Pa., assignor to General Electric Co., a corporation of New York. Application Jan. 5, 1953, Serial No. 329,688. 2 Claims. (Cl. 62—4.)



1. A two-temperature refrigerating system comprising a fresh food evaporator and a freezer evaporator connected in series, means for maintaining a predetermined pressure differential between said evaporators, a refrigerating unit for supplying refrigerant initially to said fresh food evaporator, a supply circuit to said refrigerating unit, a first control connected in series in said supply circuit, said first control being responsive to temperature of said fresh food evaporator, a second control connected in series in said supply circuit, said second control being responsive to temperature of said freezer evaporator, each of said controls being movable between open and closed positions, said second control being movable to its closed position prior to said first control being movable to its closed position, said first control being movable to its closed position when said fresh food evaporator attains a predetermined high temperature at which all frost thereon is melted for completing said supply circuit and thereby energizing said refrigerating unit, and a relay effective for maintaining said supply circuit completed after the temperature of said fresh food evaporator decreases below said predetermined high temperature thereof and said first control moves to open position, said second control being movable to its open position to break said supply circuit when said freezer evaporator subsequently attains a predetermined low temperature.

2,758,447. FOUR WAY REVERSING VALVE. John R. Prosek, Evansville, Ind., assignor, by mesne assignments, to Whirlpool-Seeger Corp., a corporation of Delaware. Application Jan. 19, 1952, Serial No. 267,244. 9 Claims. (Cl. 62—4.)



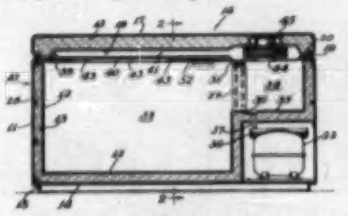
1. In refrigerating apparatus, the combination of a compressor, a condenser, an evaporator, a flow-restrictor tube, a flow-reversing valve, conduits connecting said condenser, flow-restrictor tube, and evaporator in series, additional conduits connecting said flow-reversing valve with said compressor, condenser, and evaporator, in operating relationship whereby said reversing valve functions to direct the flow of refrigerant from the compressor selectively either through the condenser and thereafter through the evaporator in one direction or through the evaporator in the opposite direction and thereafter through the condenser, a second flow-restrictor tube, a second valve operable for the passage of refrigerant therethrough in one direction only, conduits connecting said second flow-restrictor tube and second valve in series, and additional conduits connecting said second valve and second restrictor tube assembly in parallel flow relationship with said first flow-restrictor tube, whereby when the reversing valve is in operating position for directing the flow of refrigerant first through the evaporator and thereafter through the condenser the refrigerant will also flow through the second flow-restrictor tube to supplement the flow thereof through said first flow-restrictor tube.

2,758,448. HOUSEHOLD REFRIGERATOR. Ernest F. Shell, Erie, Pa., and Harold P. Harle, Louisville, Ky., assignors to General Electric Co.

In a refrigerator having a cabinet providing a fresh food storage compartment, a door providing access to said compartment, a frozen food compartment disposed in the upper portion of said fresh food storage compartment, evaporator tubing disposed in heat exchange relation with said frozen food compartment to cool said frozen food compartment and said fresh food compartment, said frozen food compartment having top, bottom, side and rear walls, a door providing

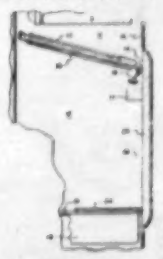
access to said frozen food compartment but slightly spaced therefrom when in its closed position, said rear wall having a gap therein to permit air flow between the interior of said frozen food compartment and said fresh food compartment, said air flow being from said fresh food compartment through the space between said door and said frozen food compartment to the interior of said frozen food compartment and through said gap to said fresh food compartment, said gap extending across the complete width of said rear wall, said gap being of less area than said rear wall, said gap being disposed in the rear wall substantially adjacent said bottom wall, said air flow between the interior of said frozen food compartment and said fresh food compartment being substantially stopped by disposing contents in the interior of said frozen food compartment.

2,758,449. HORIZONTAL BLOWER TYPE REFRIGERATED CABINET. Ralph E. Wallenbrock, Evansville, Ind., assignor, by mesne assignments, to Whirlpool-Seeger Corp.



1. In a refrigerated cabinet having a top-opening food storage area therewithin covered by a pivotally mounted closure member, the combination, comprising: refrigeration apparatus including an evaporator cooling element operative for cooling the food storage area; said evaporator cooling element being vertically disposed so as to divide the food storage area into two horizontally positioned adjacent compartments; air duct means formed in the closure member and communicating with each of said compartments; air moving means mounted in the closure member and operative for circulating air between said compartments and into heat exchange relation with said evaporator.

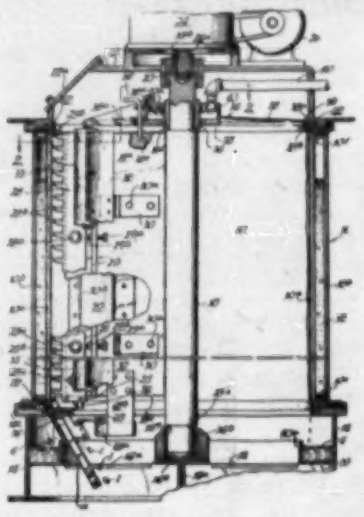
2,758,450. REFRIGERATOR CABINET. Julius B. Horvay, Erie, Pa., assignor to General Electric Co.



1. In a refrigerator including a liner having a rear and side walls defining a refrigerated compartment, cooling means located in the upper portion of said compartment and extending across the width thereof, and a transverse member disposed in said compartment beneath said cooling means and sloping downwardly from front to rear to divide said compartment into an upper cooling section and a lower storage section, said transverse member extending substantially across the width of said compartment and creating a rotary flow of air through said storage section for cooling said section; that improvement which comprises air flow means for maintaining a low temperature in the bottom portion of said storage section, said air flow means including a vertical channel recessed in said rear wall of said liner, said channel extending upwardly beyond said transverse member and downwardly to said bottom portion of said storage section to form an air flow path leading directly from said cooling section to said bottom portion, whereby said bottom portion is cooled by a column of cool air dropping directly into said bottom portion through said channel and by-passing the remainder of said storage section.

2,758,451. FLAKE ICE MACHINE AND WATER DISTRIBUTOR FOR USE THEREIN. William E. Lauterbach, Chicago, Ill., assignor to Akshun Mfg. Co., Chicago, Ill.

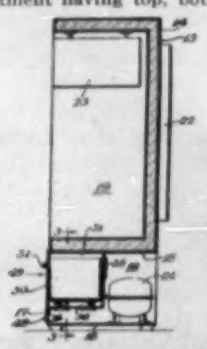
1. A flake ice making machine comprising in combination: a freezing cylinder; a rotor within the cylinder; knives on the rotor adapted to dislodge ice in flakes along an element travelling about the cylinder; and a water distributor located at the top of the cylinder and mounted on the rotor, the distributor comprising an umbrella portion sloping radially outwardly to a lip adjacent the face of the cylinder; a reservoir located towards the center of the umbrella and having a lip over which water flows onto the conical portion, the conical portion being fenced adjacent the said



travelling element to arrest water flow to points near the knives.

2,758,452. FROZEN FOODS DEFROSTING CHAMBER. Walter L. Walz, Evansville, Ind., assignor, by mesne assignments, to Whirlpool-Seeger Corp., a corporation of Delaware. Application Dec. 3, 1954, Serial No. 472,902. 7 Claims. (Cl. 62—116.)

1. In a refrigerated cabinet having refrigeration apparatus therein operative for cooling a food storage compartment formed in the cabinet, the combination, comprising: a wall member fashioned to provide an auxiliary compartment having top, bottom, back,



and oppositely disposed side walls; said auxiliary compartment being fixedly disposed in the cabinet beneath the food storage compartment and having a front side thereof open; a drawer adapted to contain articles and being positionable into said auxiliary compartment; a portion of the refrigeration apparatus being disposed in intimate heat exchange relation with the walls of said auxiliary compartment and effective for heating the contents thereof; and means including a signalling device actuable responsive to the combined effects of the weight and temperature of articles in said auxiliary compartment for indicating an increased temperature in the contents of said compartment.

(To Be Continued)

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COMMERCIAL REFRIGERATION and air conditioning sales representative, college graduate, 44, last seven and one half years with Frigidaire, service technical and instructional background, desires position representing leading manufacturer serving West Coast. H. R. BURT, 928 Contra Costa Drive, El Cerrito, California.

AIR CONDITIONING, refrigeration design and installation engineer. Eleven years' experience, design, estimating, field installation supervision, trouble shooting. Self contained, central systems to 1,000 tons, including heating. Assist with sale closings. Draw own plans and layouts. Resume, references furnished upon request. Age 36, married. BOX A5706, Air Conditioning & Refrigeration News.

POSITIONS AVAILABLE

VALUABLE TERRITORIES open!! Expanded sales program!! We have a limited number of openings for wide-a-wake aggressive manufacturer's representatives, protected territories. Sell our complete line packaged air conditioners, heat pumps, chillers, and cooling towers. New modern plant assures prompt shipments. Write fully to Pete Hatcher, sales manager, AMERICAN COILS CO., Route 524, Farmingdale, New Jersey.

MANUFACTURERS REPRESENTATIVES: Opportunity for association with a firm manufacturing quality products since 1945. We have territories available for men experienced in selling central plant conditioners, multi-zone conditioners and coils. Write THERMAL ENGINEERING CORPORATION, P. O. Box 13254, Houston 19, Texas.

SALES REPRESENTATIVE wanted, age no barrier, for sale of new development in the air conditioning field to jobbers. This new product is one of the three major components of the refrigeration cycle and will completely change existing conventional field practice. It is extremely saleable and will reward a hard-hitting individual with above average earnings on a liberal commission basis. Exclusive protected territories. Previous experience in air conditioning, refrigeration, plumbing, or heating industries desirable but not essential. Engineering background helpful. The company offering this product is now the leading manufacturer of one of the three major components of the refrigeration system. Write now, giving us personal details as well as present activity to BOX A5650, Air Conditioning & Refrigeration News.

ENGINEERS — COLLEGE graduates with experience for development, design and production engineering work on heat pump air conditioning systems and components. Unusual opportunity in growth business with substantial company located in northern New Jersey, metropolitan area. Salary commensurate with experience. Write details of background and experience in confidence to: BOX A5705, Air Conditioning & Refrigeration News.

SERVICE MANAGER: Progressive Midwestern manufacturer of air conditioning and refrigeration equipment needs an alert, enthusiastic, sales-minded service manager who has proven experience and knowledge in commercial and industrial equipment. This position is an outstanding opportunity for the right person. Write, giving full details of your background and experience to BOX A5707, Air Conditioning & Refrigeration News. All replies treated in confidence.

EQUIPMENT FOR SALE

NOW AT your local wholesaler guaranteed 20 foot lift new Kesco King Size 1957 automatic condensate water disposal pumps. 3 inches water in tank starts pump. Designed for air conditioners, ice cube bins, drinking fountains. Wholesalers, for 1957 literature, write to KESCO PRODUCTS CORP., Box 84, Springfield Gardens 13, New York.

BUSINESS OPPORTUNITIES

FOOD MACHINERY equipment business established over 15 yrs. Good national known brands distributorships. Real estate consisting of store building 55 x 40 and 2 frame houses 100 x 55 for further expansion or parking space. On one of Tampa's main commercial thoroughfares. Mail inquiries to FOOD MACHINERY EXCHANGE, 1900 Nebraska Avenue, Tampa, Florida. Full price around $45,000. Can finance $25,000.

WANTED: RELIABLE and capable distributors for our air conditioning and refrigerating equipment. Good territories available. Full line of compressors, condensers, coils, coolers, controls, valves and fittings, pressure vessels, etc. Contracts include repairs and spare parts for equipment now in use. Profitable account. Address Department B, FRICK COMPANY, Waynesboro, Pennsylvania. Refrigeration Engineering Pioneers since 1882.

IN FABULOUS Florida, world's best year-round climate—Illness of owner forces sale of store fixture and restaurant supply business. Best lines. Opportunity at low down payment price of approximately $3,500.00. L. E. WAGNER, 812 West Memorial Blvd., Lakeland, Florida.

AVAILABLE THROUGH purchase or merger. Established air conditioning and heating wholesaling firm. Annual sales one-half million. Located major city in Southern California. Transfer of franchises contingent upon acceptance by manufacturers based upon trade reputation, financial strength. Principals only. BOX A5693, Air Conditioning & Refrigeration News.

MISCELLANEOUS

ATTENTION SERVICEMEN: Send for free circulars and bulletins on refrigeration parts and equipment. Real money saving values: WALTER W. STARR: 2833 Lincoln Avenue, Chicago 13, Illinois.

Plans To Bar Bid Shopping--

(Concluded from Page 1, Col. 4)

The code of ethics of the state association is incorporated in the fly-leaf of the booklet.

Second step is to standardize the bidding. This means getting together with the architects and others who prepare the specifications to determine just what is in the contract and what is not in the contract.

Impartial Observer 'Should' Go Over Contract

Moody suggested that an impartial consultant be hired or a contractor who is not bidding on the particular contract be requested to go over the contract.

The consultant should brief carefully the plans and specifications and call to the attention of the bidders any unusual requirements of these documents.

Should a bidder desire clarification of any item, the consultant would clear it with the architect and pass the information on to all bidders.

Should the bidders desire to check quantities, the consultant could act as a clearing house. Should a bidder's quantities appear excessively less than the average, the consultant could suggest that he re-check his take-off.

Moody believed that such a service would tend to eliminate some errors in bidding and bring a more realistic bid practice, keeping some low bidders from bidding dangerously low.

Clarification of plans with the architect would eliminate problems where one bidder gets the clarification and the others hear nothing about it, thus penalizing them in their bidding.

Another part of this standardization of bidding is to get an agreement with suppliers that they will quote to sub-contractors only on materials or equipment which come up to the bid specifications as set forth.

Quoting on equipment that does not meet the specifications or unacceptable alternates has become a time consuming and costly burden, Moody declared. Mechanical contractors should be urged not to include such equipment in their bids.

A third part of standardization of bidding is to promote with architects inclusion of testing and adjustment requirements, the guarantee required, and a recognition of existing codes.

Standardize Bid Forms

Third step is to standardize the bid forms. This calls for a standard base bid form, a form for submission of extras, and a form for the submission of fixed fee and/or cost plus work. By being thus standardized, Moody explained, it will be more difficult for a bidder to overlook some item in his bid.

Then the fourth and final step is the bid depository. Moody suggested that the trust department of some banking firm be used for the deposit of bids until time of opening or that they be turned over to some trustworthy consultant. This will assure that no one sees the bids until the proper time, it was noted.

If it is necessary that the general contractor open and evaluate the bids before submitting a general bid at the deadline, it could be arranged that he could have access to the sub-contract bids four hours —or some adequate time period —before his bid must be submitted.

Purpose of the bid depository, Moody stressed, is to protect the low bid and to let the low bidder know that he is low bidder.

Moody further stressed that this procedure was no attempt to fix prices or anything of the sort. At no point during the whole procedure are prices or amounts of sub-bids ever discussed.

It is just an attempt to keep the general contractor from "chiseling" on subcontractors, he added.

Trend Adjustment--

(Concluded from Page 1, Col. 5)

Corp.; John M. Otter, executive vice president of Philco Corp.; C. W. Theleen, manager of customer relations, General Electric Co.; W. B. Creech, manager of key accounts, Westinghouse Electric Appliance Div.; and Dan Creato, vice president of RCA Service Co.

Advance registration may be made with Al Bernsohn, NARDA managing director. Cost is $32.50 before Jan. 1, $35 after that date.

See Upped Frozen Food Pack

WASHINGTON, D. C.—As a result of a survey made by the Dept. of Agriculture on use of frozen foods in restaurants, it was estimated that by 1975 restaurant demand will boost the frozen vegetable pack 14% and the frozen fruit pack 4%.

Chicago Winter Marts--

(Concluded from Page 1, Col. 2)

Market visitors will find some changes in exhibit spaces.

At The Merchandise Mart, Philco Corp., on Jan. 7, will officially open its new display area of more than 15,000 sq. ft. on the 11th floor. The area will also be headquarters for the company's midwest district office. The market will be the first time the new Philco-Bendix line of automatic laundry equipment will be shown at a trade meeting.

It was also announced that Revco, Inc. has leased display space in The Merchandise Mart and will move its Chicago headquarters to The Mart's 11th floor in time for the January market.

Revco will occupy spaces 1135-37, part of the area formerly used by Crosley-Bendix. The balance of the area will be occupied by The Tappan Stove Co., another new appliance tenant. Revco's Mart offices and display will be maintained the year-round under the supervision of William H. Pierson, Chicago district sales manager.

Also on the 11th floor, Hotpoint is redecorating its space and Maytag is moving into the old CBS space.

The Merchandise Mart will furnish free bus service for registered buyers between The Mart and loop hotels, as well as between The Mart and The American Furniture Mart.

At the Furniture Mart, appliances are no longer shown on the 17th floor, it was reported. The management said that of the 70 manufacturers who showed on that floor, half have moved to the fifth floor.

Defrost Electrically

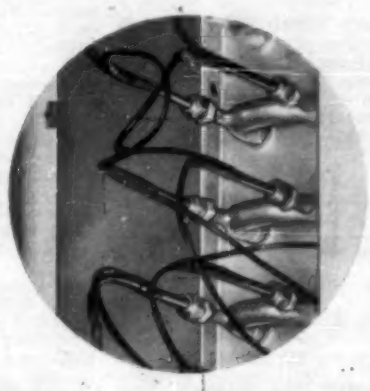
SAFELY... SURELY

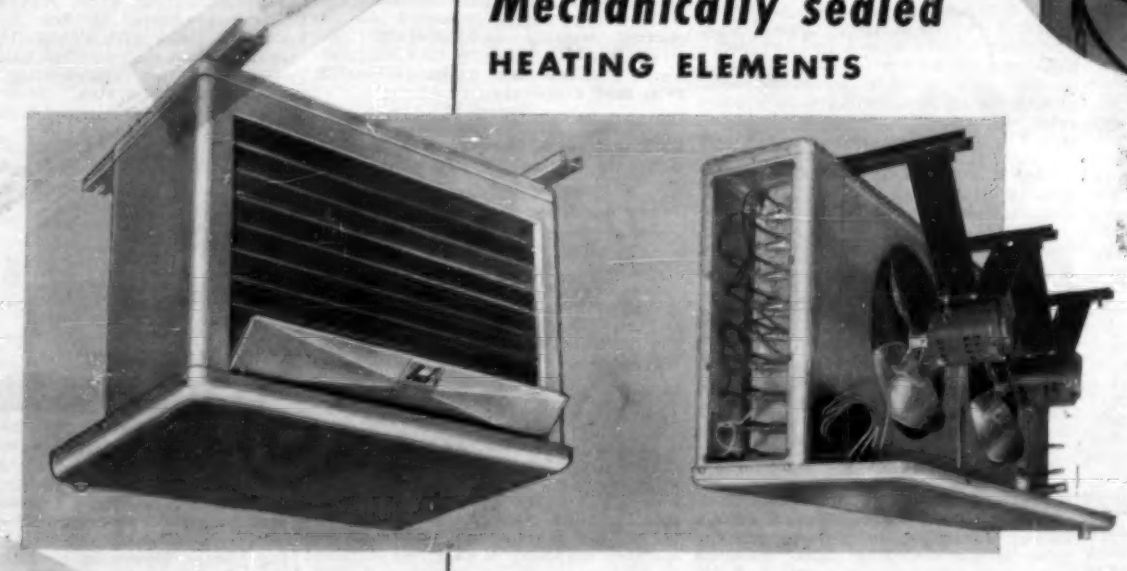
with DUNHAM-BUSH 'ED' UNITS

NOW FEATURING

Mechanically sealed

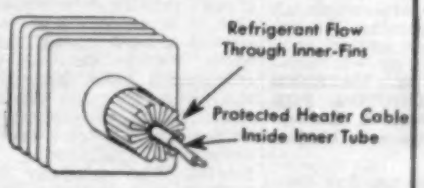
HEATING ELEMENTS





DRAIN PAN HEATING PAD

Conductive rubber electrical heating blanket provides quick, safe heat that prevents refreezing of water during defrosting. No heating wires . . . heating element is conductive rubber, hermetically sealed, shockproof and waterproof.



No defrost problems with these Dunham-Bush low temperature units! *Mechanically sealed* heating elements provide *positive* protection against entry of water into system. Defrosting is safe . . . sure . . . complete. And control kit (furnished) makes defrosting *entirely automatic.*

Inner-Fin® coil construction, exclusive with Dunham-Bush, permits units to defrost *from the inside.* Heat source for defrosting is a specially designed heater cable contained within the inner tube. Greater surface area which Inner-Fin construction provides assures rapid distribution of heat, quicker defrosting and minimum room temperature rise.

Units are available in capacities from 4500 to 36000 BTU/hr.

Write for complete information.

Dunham-Bush, Inc.

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DUNHAM-BUSH

AIR CONDITIONING, REFRIGERATION, HEATING PRODUCTS AND ACCESSORIES

For more information about products advertised on this page use Information Center, page 16.